



# Naval Research Laboratory

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## Anacostia Wet Weather Receiving Water Monitoring Survey: Event 1

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<b>INTRODUCTION .....</b>	<b>1</b>
Quality Assurance / Quality Control .....	3
<b>METHODOLOGY .....</b>	<b>3</b>
Sampling .....	3
<b>Biological Oxygen Demand (BOD).....</b>	<b>4</b>
Methods .....	4
QA/QC.....	4
Field Problems .....	4
<b>Total Suspended Solids and Volatile Suspended Solids (TSS and VSS).....</b>	<b>4</b>
Methods .....	4
QA/QC.....	4
Field Problems .....	4
<b>Nutrients (NO<sub>3</sub><sup>-</sup> &amp; NO<sub>2</sub><sup>-</sup> as N, NH<sub>4</sub><sup>+</sup> as N, o-PO<sub>4</sub><sup>2-</sup> &amp; Total PO<sub>4</sub><sup>2-</sup>) .....</b>	<b>5</b>
Methods .....	5
QA/QC.....	5
Field Problems .....	5
<b>Dissolved, Total and Particulate Organic Carbon (DOC, TOC &amp; POC) .....</b>	<b>6</b>
Methods .....	6
QA/QC.....	6
Field Problems .....	6
<b>Total Kjeldahl Nitrogen (TKN).....</b>	<b>7</b>
Methods .....	7
QA/QC.....	7
Field Problems .....	7
<b>Water Quality Parameters (Temperature, Conductivity, Dissolved Oxygen, pH &amp; Turbidity) .....</b>	<b>7</b>
Methods .....	7
QA/QC.....	7
Field Problems .....	7
<b>RESULTS .....</b>	<b>8</b>
<b>Coliforms .....</b>	<b>9</b>
<b>Biological Oxygen Demand (BOD).....</b>	<b>9</b>
<b>Total Suspended Solids and Volatile Suspended Solids (TSS and VSS) .....</b>	<b>9</b>
<b>Nutrients: TON (Total Oxidizable Nitrogen -- NO<sub>3</sub><sup>-</sup> &amp; NO<sub>2</sub><sup>-</sup>), NH<sub>4</sub><sup>+</sup> as N, o-PO<sub>4</sub><sup>2-</sup> &amp; Total PO<sub>4</sub><sup>2-</sup> .....</b>	<b>9</b>
<b>Dissolved, Total and Particulate Organic Carbon (DOC, TOC &amp; POC) .....</b>	<b>10</b>
<b>Total Kjeldahl Nitrogen (TKN).....</b>	<b>10</b>
<b>Water Quality Parameters.....</b>	<b>11</b>

<b>SUMMARY .....</b>	<b>11</b>
<b>FIGURES.....</b>	<b>12</b>
<b>TABLES .....</b>	<b>38</b>
<b>APPENDIX 1 .....</b>	<b>58</b>
Technician Log.....	58
Field Conditions Sheet.....	58
Lab Conditions Sheet .....	58
<b>APPENDIX 2 .....</b>	<b>62</b>
PE Evaluations.....	62
QA/QC Data from CAL.....	62
<b>APPENDIX 3 .....</b>	<b>76</b>
Chain of Custody Forms (NRL) .....	76
Chain of Custody Forms (CAL) .....	76
<b>APPENDIX 4 .....</b>	<b>83</b>
Laboratory Data Sheets (NRL) .....	83
Raw Data Sheets (CAL) .....	83

## INTRODUCTION

The Naval Research Laboratory (NRL), working in conjunction with the Metropolitan Washington Council of Government (MWCOG), monitored overflows of the combined sewer system (CSS) and separate storm water system (SSWS) in the Anacostia River in the District of Columbia. The NRL/MWCOG contribution is part of a larger effort by the District of Columbia Water and Sewer Authority (WASA) to develop a Long Term Control Plan (LTCP) for the combined sewer system in the District of Columbia.

NRL monitored four rain events. This report includes the data, QA/QC controls and analysis of the data for Event 1. The Event 1 sampling began on March 16, 2000 at 18:05 and ended on March 18, 2000 at 15:10. A log of the field and laboratory conditions was maintained by field personnel. Copies of these notes can be found in Appendix 1

Sampling was conducted at 5 stations located near CSS outfalls on the Anacostia River which are located at the following locations (See Graphic A for location of stations):

**Station 1:** Located beneath the New York Ave. Bridge at the DC/Maryland district- / stateline.

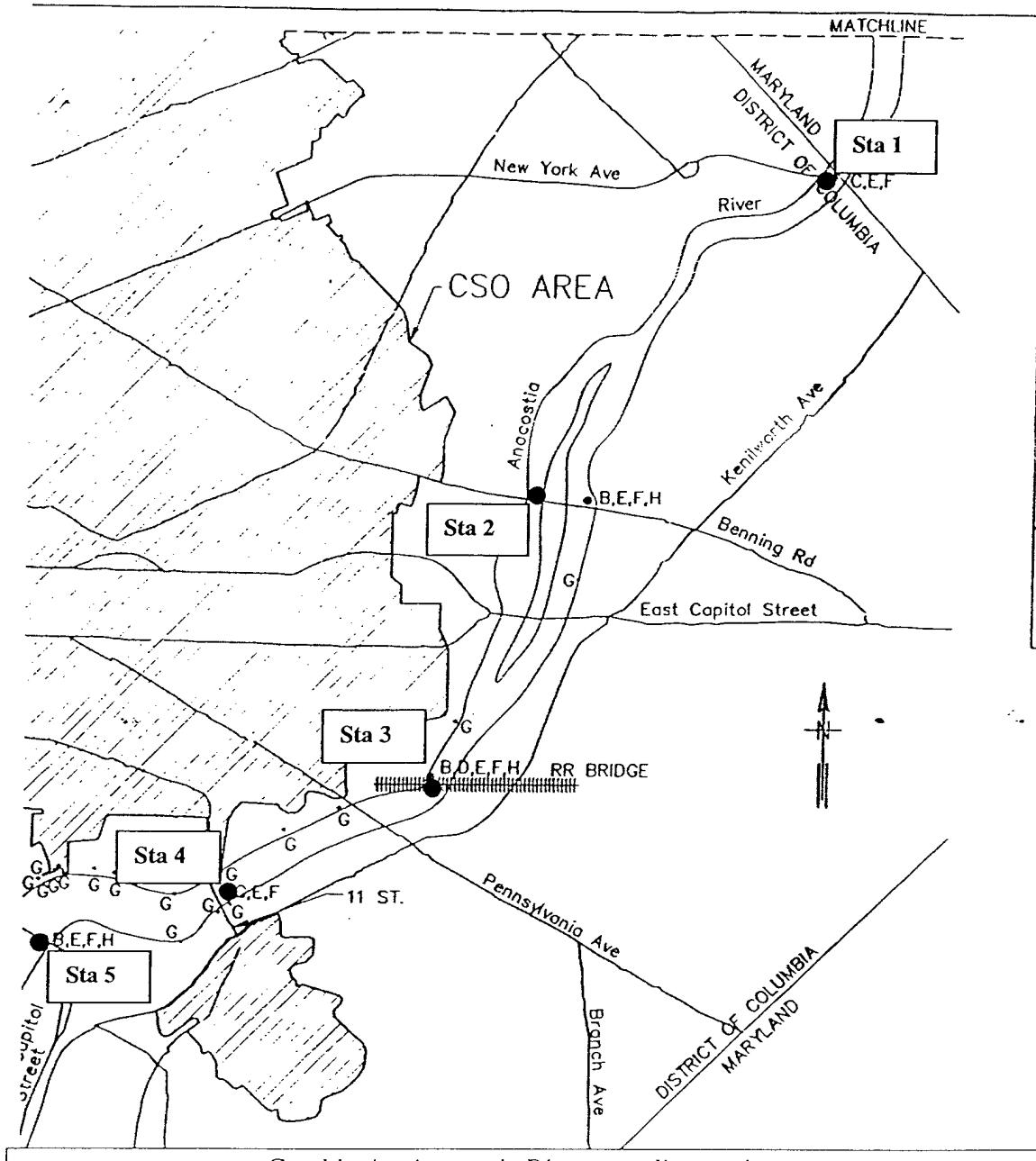
**Station 2:** Located beneath the Benning Rd. Bridge near the PEPCO Power Station.

**Station 3:** Located at the railroad bridge at the northern end of Anacostia Park

**Station 4:** Located beneath the Anacostia Bridge (11<sup>th</sup> Street)

**Station 5:** Located at Douglas Bridge (South Capitol Street)

Event Station_ID	Routine Station_ID	Description	Latitude	Longitude	River_mile
1	FA01	DC/MD Line	38.9165	-76.9443056	6.56
2	FA02	Benning Rd	38.8968611	-76.9625833	4.57
3	FA03	Penn. Ave	38.8785833	-76.9669444	2.85
4	FA04	11th St.	38.8715	-76.9901389	2.1
5	FA05	S. Capitol St.	38.8680833	-77.0068333	0.97



According to the CSO overflow data provided to NRL by Greeley and Hansen, there was one overflow event during the period of Event 1. 3.06 million gallons of overflow were measured at the Northeast Boundary CSO. This CSO is in the closest proximity to Station 2.

### **Quality Assurance / Quality Control**

Performance Evaluation (PE) data from Ammonia, Total Oxidizable Nitrogen (TON:  $\text{NO}_3^-$  and  $\text{NO}_2^-$ ), o-Phosphate, Total Phosphate and TKN from water pollution (WP) and water source (WS) samples were submitted to Analytical Products Group on September 15, 2000. For the WP samples, our laboratory passed all analyses with the exception of Total Phosphates. Our analysis of this parameter for both the WP and APG+ samples was 0.6 mg/L higher than the accepted range. Considering the accuracy of the other PE measurements we reported, the problem was doubtless with the persulfate digestion procedure. Chesapeake Analytical Laboratory, an independent lab contracted by Geo-Centers, Inc. to analyze TKN samples, passed the WP and WS evaluations for TKN. Results from the performance evaluation are included in Appendix II. Results from the WS evaluation will be released on October 5, 2000. Upon receipt, NRL will forward copies of this report to MWCOG.

Chain of Custody (COC) forms and temperature blanks accompanied the transfer of all samples from the field lab to NRL and from NRL to Chesapeake Analytical Laboratory. Because a large number of samples transferred, it was impossible to itemize each sample in the COC forms. Instead, sets of samples (e.g. all TKNs from cycles 4-6) were recorded as a single entry. This simplification made it possible to maintain efficient sample transfer during the event. COC forms are found in Appendix III. Chesapeake Analytical Laboratory (CAL), Inc. (301-932-4775) of Waldorf, MD was contracted to process and analyze TKN samples. COC forms from CAL are included in Appendix III. QA/QC requirements from CAL are in Appendix II.

## **METHODOLOGY**

### **Sampling**

Qualified NRL employees and contractors collected samples from each of the stations approximately every 4 hours. Field technician log sheet is in Appendix I. In theory, over the 48-hour period, 12 sampling cycles (hereafter referred to as "cycles") were completed. Inclement weather, however, limited the sampling to 11 cycles for this event. Certified US Army Corps of Engineer personnel piloted the boats and accompanied field personnel. Water samples were collected from 1m depth in a Van Dorn Bottle and transferred to appropriate storage containers (described below) for processing and analysis.

## **Biological Oxygen Demand (BOD)**

### *Methods*

Duplicate samples were collected in 60ml BOD bottles with ground glass stoppers. The 5 Day BODs were determined as described by EPA method 405.1. The procedure to determine the 5 day BOD follows the standard technical procedure (SM5210B) as previously described (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998). Dissolved oxygen (DO) was measured by potentiometric titration. The analytical determination follows the method described by Oudot et al. (1987). See the Quality Assurance Project Plan for reference (on file at WASCOG).

### *QA/QC*

Duplicate samples were run for every sample although QA/QC scheduling required duplicate samples once every 20 samples. The titrant (0.14M sodium thiosulfate) was standardized with a standard  $KIO_3$  solution during the event. Spikes and analytical standards are not applicable to this method. Because the residual DO in all bottles after 5 days was  $>1$  mg/L, dilution water blanks and glucose/glutamic acid checks were not necessary. Laboratory data sheets for the BOD analysis are located in Appendix IV.

### *Field Problems*

None.

## **Total Suspended Solids and Volatile Suspended Solids (TSS and VSS)**

### *Methods*

Duplicate samples were collected in 250ml Nalgene bottles. The full volume of the bottle was filtered through a preweighed 48mm GFF filter in the field lab. Loaded filters were stored at  $-20^{\circ}C$  until analysis. The TSS and VSS concentrations were determined as described by EPA method 160.2 and 160.4, respectively. The procedure follows the standard technical procedure, SM2540D&E, respectively (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998).

### *QA/QC*

Duplicate samples were run for every sample although QA/QC scheduling stated that duplicate samples were required once every 20 samples. Spikes and analytical standards are not applicable to this method. Filter blanks for VSS analysis were determined for each set of samples. Equipment Blanks and Field Blanks were collected and analyzed as noted in Appendix II. Laboratory data sheets for TSS and VSS analysis are in Appendix IV.

### *Field Problems*

None.

## Nutrients ( $\text{NO}_3^-$ & $\text{NO}_2^-$ as N, $\text{NH}_4^+$ as N, o- $\text{PO}_4^{2-}$ & Total $\text{PO}_4^{2-}$ )

### *Methods*

Duplicate samples were collected in 250ml Nalgene bottles. Samples were filtered through ashed (450°C for 4 hrs) 48mm GFF filters and collected in clean 60ml Nalgene bottles. Samples for N as nitrate & nitrite (also known as and hereafter referred to as Total Oxidizable Nitrogen (TON)), N as ammonia and o-phosphate were collected in one bottle, and samples for total phosphate were collected in another bottle. Samples were frozen at -20°C until analysis (TON,  $\text{NH}_4^+$  and o- $\text{PO}_4^{2-}$ ) or digestion (Total  $\text{PO}_4^{2-}$ ). TON, ammonia and phosphate (for total and o-phosphate) were analyzed on an Amicon Nutrient Analyzer (OI Analytical, College Station, TX) following the methods reported below.

TON concentrations were determined as described by EPA method 353.2, "Determination of nitrite by semi-automated colorimetry." The procedure follows the standard technical procedure, SM4500- $\text{NO}_3^-$  I, Cadmium Reduction Flow Injection (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998). This method reduces the ambient nitrate to nitrite, and the combined nitrite (reduced nitrate + ambient nitrite) is analyzed.

Ammonia concentrations were determined as described by EPA method 350.1, "Determination of ammonia by semi-automated colorimetry." The procedure follows the standard technical procedure, SM4500- $\text{NH}_3\text{G}$ , Automated Phenate Method (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998).

Orthophosphate concentrations were determined as described by EPA method 365.1, "Determination of phosphate by semi-automated colorimetry." The procedure follows the standard technical procedure, SM4500-PG, Flow Injection Analysis for Orthophosphate (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998).

Total phosphate concentrations were determined by the standard technical procedure, SMP4500-PH, "Manual Digestion Flow Injection Analysis for Total Phosphorus" (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998). Organic phosphorus was converted to phosphate by the persulfate digestion procedure.

### *QA/QC*

Duplicate samples were run every 10 samples. Method blanks and laboratory control samples were run according to schedule. Equipment Blanks and Field Blanks were collected and analyzed as noted in Appendix II. Laboratory data sheets for the nutrient analyses are in Appendix IV.

### *Field Problems*

None.

## Dissolved, Total and Particulate Organic Carbon (DOC, TOC & POC)

### *Methods*

Duplicate samples were collected in 250ml Nalgene bottles. TOC and DOC samples were transferred from the sample bottles into precombusted (450°C for 8 hrs) glass amber ampoules via syringe. Samples for DOC analysis were filtered through precombusted (450°C for 4 hrs) 13mm GFF filters. Twenty microliters of phosphoric acid (85%) was added to the ampoules prior to adding the sample. Ampoules were heat sealed and stored at 4°C until frozen at NRL prior to analysis. TOC and DOC concentrations were determined by the standard technical procedure, SM5310B (Standard Methods for the Examination of Waters and Wastewaters, 20<sup>th</sup> edition, 1998). Analysis was performed on an MQ1001 Total Organic Carbon Analyzer (MQ Scientific, Washington).

Particulate Organic Carbon (POC), a parameter not listed in the QAPP, was also analyzed for Event 1. This parameter was measured to test the efficiency of SM5310B for determining TOC. The total organic carbon (TOC) of a water sample is the sum of the dissolved and particulate (DOC + POC) constituents. Thus, the sum of the DOC and POC constituents should equal the measured TOC. However, because of particle flocculation and settling, it is likely the subsample injected into the high temperature oxidation column would not contain a proportional amount of the particulate fraction. We hypothesized the TOC method would underestimate the actual TOC, and to test this hypothesis, we measured the POC fraction. Particles from a measured volume of water were collected on a 13mm precombusted (450°C, 4hrs) GFF filter. These filters were placed in an acidic atmosphere for 24 hours to remove trace carbonates, dried and analyzed for carbon content and percent carbon composition on a Carlo-Erba Elemental Analyzer.

### *QA/QC*

Duplicate samples were run for every sample. Analytical standards (or Laboratory control samples (LCS)) were run once per 20 samples, or once per batch, whichever was greater. Because of a slight drift in the instrumentation, the analytical standards were used to continuously update the standard curve. Equipment blanks and field blanks were collected and analyzed as noted in Appendix II. Laboratory data sheets for DOC, TOC and POC analyses are in Appendix IV.

### *Field Problems*

None.

## **Total Kjeldahl Nitrogen (TKN)**

### *Methods*

Duplicate samples were collected in 250ml Nalgene bottles. Samples were preserved at pH<2 with H<sub>2</sub>SO<sub>4</sub> and stored at 4°C until delivery to NRL, where they were frozen until analysis. Samples were analyzed by Chesapeake Analytical Laboratory, Inc. of Waldorf, MD by EPA Method 351.2.

### *QA/QC*

Duplicate samples were run every 10 samples. Method blanks, matrix spikes and laboratory control samples were run according to schedule (See Appendix II). Equipment blanks and field blanks were collected and analyzed as noted in Appendix II. Raw data sheets received from CAL are in Appendix IV.

### *Field Problems*

None.

## **Water Quality Parameters (Temperature, Conductivity, Dissolved Oxygen, pH & Turbidity)**

### *Methods*

Temperature (°C), conductivity (μS/cm), dissolved oxygen (DO) (mg/L) and pH were measured with a Hydrolab Datasonde 4 Water Quality Multiprobe (Hydrolab Corporation, Austin TX).

### *QA/QC*

The instrument was maintained according to manufacturer's specifications and calibrated prior to each field event. Duplicate measurements were scheduled to be recorded once every 10 readings. Duplicate measurements are reported in Table 9.

### *Field Problems*

Prior to the initiation of this project, the Datasonde 4 was sent to the manufacturer for repairs. The nephelometer was mistakenly removed while being repaired. During Event 1, because the data was recorded in the Datasonde 4, the absence of the nephelometer was not recognized. Its absence was realized during Event 2, at which time it was too late to get the probe installed for said event. We were unable to get the nephelometer replaced for any of the storm water events.

During Event 1, the primary Datasonde 4 malfunctioned during sample cycle 4. Consequently, no data from stations 1,2 & 3 were obtained for that cycle. The primary Datasonde 4 was replaced with a second unit, but the second unit was not programmed to display specific conductivity. Thus, specific conductivity data for this Event was not recorded from cycles 4-11. Later, for reasons unknown, no water quality data was obtained for sample cycle 9.

## RESULTS

Data from Event 1 is presented in the following order: Biological Oxygen Demand (BOD), Total Suspended Solids and Volatile Suspended Solids (TSS and VSS), Nutrients ( $\text{NO}_3^-$  &  $\text{NO}_2^-$  as N,  $\text{NH}_4^+$  as N,  $\text{o-PO}_4^{2-}$  & Total  $\text{PO}_4^{2-}$ ), Dissolved and Total Organic Carbon (DOC and TOC), Total Kjeldahl Nitrogen (TKN) and Water Quality Parameters. A brief description and interpretation of the data is provided in this section. In conjunction with the plots provided, this interpretation is intended to provide some spatial (station averages and cycle summaries) and temporal (cycle averages and station summaries) insight. Hopefully, this preliminary perspective will serve as a useful guide for directing model development and detailed statistical analysis.

Data tables for each parameter are in the TABLES section. Field duplicate data is included or calculated into the tables. In Tables 2-6, every 10-20 samples the data column contains two values (x1/x2), which are the duplicate measurements. In the adjacent column to the right, a standard deviation is reported. This standard deviation was calculated using the duplicate values. It is recognized that a standard deviation should be calculated from a set of three samples, so consider the calculated standard deviations with that in mind. In some instances the duplicate measurements are listed on an independent record. If more than one duplicate was analyzed every 10-20 samples, the additional duplicate measurements may not be listed. In such instances, only the standard deviations are listed.

The plots referred to in the data interpretation are in the FIGURES section. The first figure for each parameter contains a plot with the cycle averages and a plot with the station averages. The second figure contains a station summary, which plots the parameter value at each station against the event time or cycle number. Cycle numbers represent each of the sample cycles and are separated in time by approximately 4 hours. For an exact cycle time see the collection time provided in the corresponding data table (TABLES Section). The third figure of each dataset contains a cycle summary that plots the parameter value against each station samples during the cycle.

Detailed coliform data from Event 1 was provided in a separate report submitted by Dr. Joanne Jones-Meehan. It is advisable to obtain those reports to compare the biological and chemical data. The complete coliform dataset is not included in this report. However, to help bridge the two reports, a brief description of the coliform data and representative plots courtesy of Dr. Joanne Jones-Meehan are included. The brief description of the coliform data precedes the results for this report and the representative plots are found in the FIGURES section.

Discussion of the data in this report will be stated in relative terms. For instance, rather than stating Station 2 had a BOD of 3.4mg/L, which was 2.1mg/L higher than that measured at Station 1, this report will state that the BOD at Station 2 was higher than the BOD measured at Station 1. For exact measurements, refer to the figures and data tables.

## Coliforms

The highest **total** coliforms were enumerated from Station 2 (Figure 1). In samples collected 12 hours after the beginning of the rain event approximately 90000cells/100ml were counted. After 36 hours, Station 2 maintained the highest coliform count with an approximate count of 16000cells/100ml. Upriver and downriver of this station the total coliform counts were progressively less.

The **fecal** coliform counts followed a different pattern (Fig 2). Counts from samples collected 12 hours after the rain began were highest at Station 1 (@ 1700counts/100ml) and progressively decreased upriver. After 36 hours, however, Station 4 samples had the highest fecal coliform counts (@1700/100ml). Upriver and downriver of this station the fecal coliform counts were progressively less. Such a pattern suggests two discrete inputs of coliform affected water.

## Biological Oxygen Demand (BOD)

The data is presented in Table 1 and the plots appear in Figures 3-5. The highest average BOD was measured during Cycle 6 (Fig 3A), approximately 24 hours after the rain event began. Station 2 had the highest average BOD (Fig 3B), which is the same location where the total coliform count was the highest.

## Total Suspended Solids and Volatile Suspended Solids (TSS and VSS)

The data is presented in Table 2 and the plots appear in Figures 6-8. Resembling the BOD pattern, the highest average TSS concentration was measured from Cycle 8 and at Station 2 (Fig 6). Average VSS concentrations were also highest during Cycle 8 and at Station 2, but they were not significantly higher than the other cycles or stations.

## Nutrients: TON (Total Oxidizable Nitrogen -- $\text{NO}_3^-$ & $\text{NO}_2^-$ ), $\text{NH}_4^+$ as N, o- $\text{PO}_4^{2-}$ & Total $\text{PO}_4^{2-}$

Ammonia and TON: The ammonia and TON data are presented in Table 3, and the plots appear in Figures 9-11. Following an initial increase between cycles 1 and 2 for both TON and NH4 (Fig 9), the concentrations remained fairly consistent during the course of the event. NH4 concentrations continued to increase for the duration of the event, but only slightly. Excluding Cycle 1, TON was remarkably consistent during each cycle. Ammonia in the river was somewhat less consistent as evidenced by periodic spikes and dips seen in several plots (Fig 10), but this may be due to instrumental drift. Ammonia is the analyte most sensitive to instrumental drift. Nevertheless, there are some interesting variations in the ammonia levels. Excluding Cycle 1, when the concentrations of NH4 throughout the river were similar, the pattern of ammonia concentrations increasing from upriver to downriver was consistent. On the average, Station 4 had the highest concentration.

Phosphates (Ortho and Total): The ammonia and TON data are presented in Table 3, and the plots appear in Figures 12-14. Phosphorus concentration (ortho and Total) were consistently low throughout the event. Total phosphates were, not surprisingly, more abundant than ortho-phosphates. However, other than a few concentration spikes they do not show any clear patterns regarding outfall indications. Station 2 displayed a consistent increase throughout the event (Fig 13B). Perhaps the most interesting observation about

the o-PO<sub>4</sub> data is that the average concentration per cycle drop from near 0.03 mgP/L during cycle 1 (Fig 12A) to near 0 in all subsequent cycles at all stations, except for cycle 6 when concentrations increase slightly. Station 4 had the highest initial concentration during cycle 1. Using presence or absence of o-PO<sub>4</sub> as an indicator of inputs to the river, times previous to Cycles 1 and 6 seem most likely.

#### **Dissolved, Total and Particulate Organic Carbon (DOC, TOC & POC)**

The data is presented in Tables 4,5,6&7 and the plots appear in Figures 15-19. DOC, TOC and POC concentrations increased gradually throughout the Event (Figure 15a). The most rapid period of increase appeared at Station 1 between and including cycles 2 to 4 (Figure 16a). Station 2 maintained the highest concentrations throughout the event (Figure 16b: notice exaggerated scale). A period of increasing organic carbon concentrations is also observed at stations 2 and 3 during the latter cycles (9-11) of this event (Figures 16b&c). On the average, concentrations decrease gradually downriver from Station 2 (Figure 15b).

Figure 18 compares the two different methods we used to measure TOC during this event. (TOC values appearing in the previous plots followed SM5310B, as prescribed by the QAPP.) The first column for each station represents TOC results obtained using method SM5310B. The second column for each station represents TOC concentrations obtained by adding the measured DOC concentration and the measured POC concentration. Since DOC and POC constitute the entire aquatic organic pool summing them is a suitable proxy for TOC. The standard method yielded TOC values 15-25% lower than the values obtained by summing the DOC and POC. By this measure, it appears the TOC data appearing in this report underestimates the actual TOC.

The POM percent organic carbon (%OC) data is presented in Figure 19. (Note: This data is provided courtesy of NRL. It is not listed as a required parameter in the QAAP.) The POM%OC data exhibits a positive correlation with the POM concentration ( $r^2=0.76$ ). This suggests that the particulate input into the water column (be it from outfalls or resuspension) is of higher organic carbon content than what is typically present. The result of this increase of available organic carbon may affect the microbiology in the river. For instance, the BOD increases during the sampling event alongside the POC. Likewise, the DOC, which also fuels microbial metabolism may also be responsible for the increase in BOD. At any rate, identifying all the factors that capable of impacting the riverine ecology is of critical importance.

#### **Total Kjeldahl Nitrogen (TKN)**

The data is presented in Table 8, and the plots appear in Figures 20-22. TKN showed little variation in the cycle average during Event 1, but Station 3 and the downriver stations (3-5) had higher overall TKN than the upriver stations (1&2). This pattern is counter to that observed in the BOD, solids and organics where the higher concentrations were measured upriver (Stations 1&2).

## Water Quality Parameters

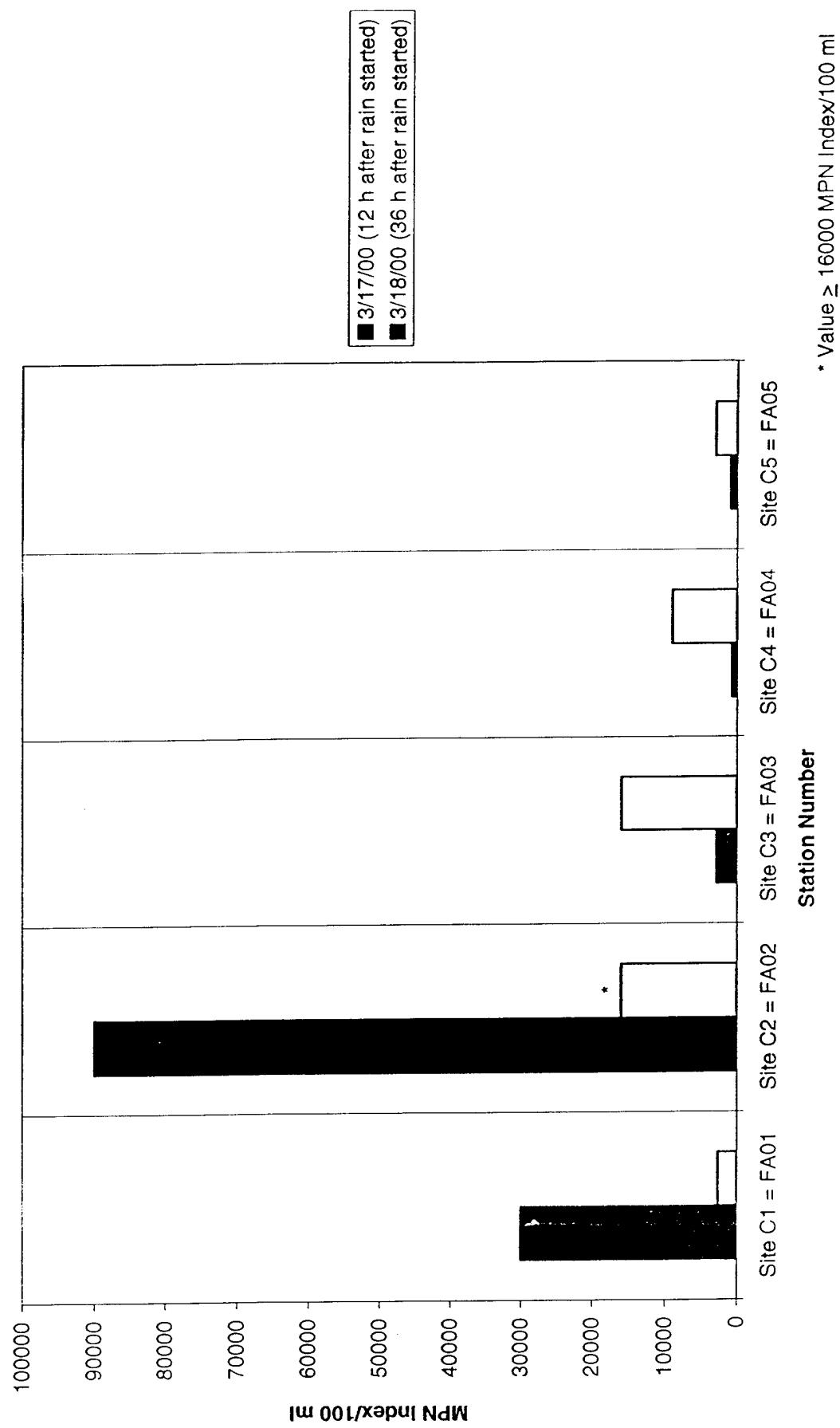
The data is presented in Table 9, and the plots appear in Figures 23&24. The average temperature during Event 1 was between 11 and 12°C and decreased throughout the event. Temperatures at Station 1 were slightly lower than the other stations which had almost identical average temperatures. The average pH did not change throughout the event and was highest at Station 5. Specific conductivity was also lowest at Station 5. The average dissolved oxygen (DO) did not change appreciably during the event and was highest at Station 1. The variations measured at Station 1 were most likely due to tidal dilution by the Potomac River.

## SUMMARY

Stations 2 and 4 consistently exhibited the highest values among the water quality parameters we measured. Initial increases among most of the parameters (BOD, coliforms, nitrogen, phosphate, organics) in the upriver stations during the 1<sup>st</sup> and 2<sup>nd</sup> cycles was followed by a slack period when concentrations leveled off or decreased. Then, near the time of Cycle 6 the concentrations of some parameters (particulates, BOD, coliforms, phosphorus, organics) increased again at the downriver stations. Despite the small CSO overflow reported, there was substantial impact on the water quality and microbiology of the river on at least two occasions in two different locations. The outfalls monitored did not provide an accurate measure of the impact of this storm on the Anacostia River.

## **FIGURES**

**Figure 1. Anacostia River (Storm Event)  
Method #9221B (Total Coliforms)**



**Figure 2. Anacostia River (Storm Event)  
Method #9221E (Fecal Coliforms)**

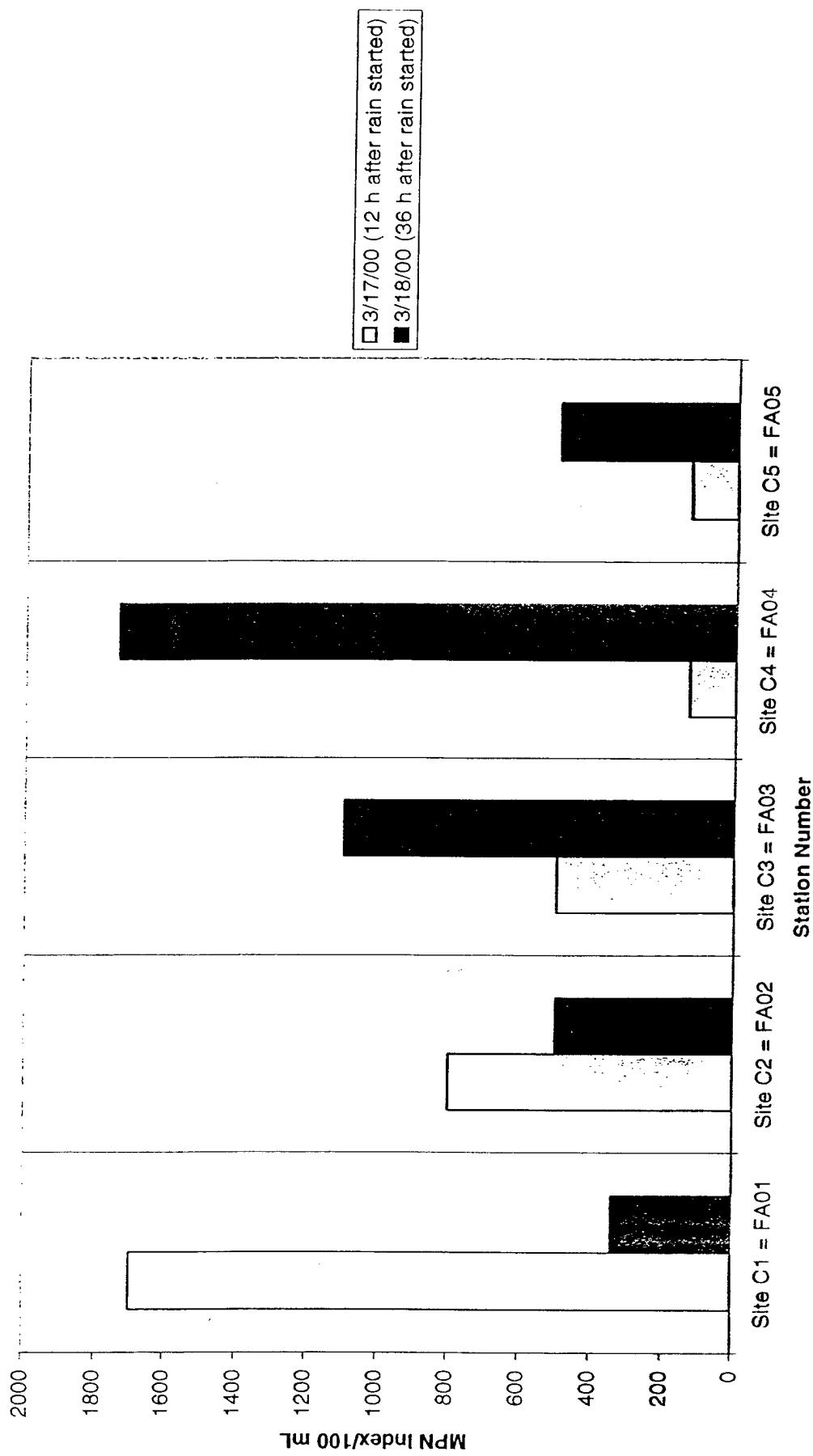


Figure 3: BOD, Event 1

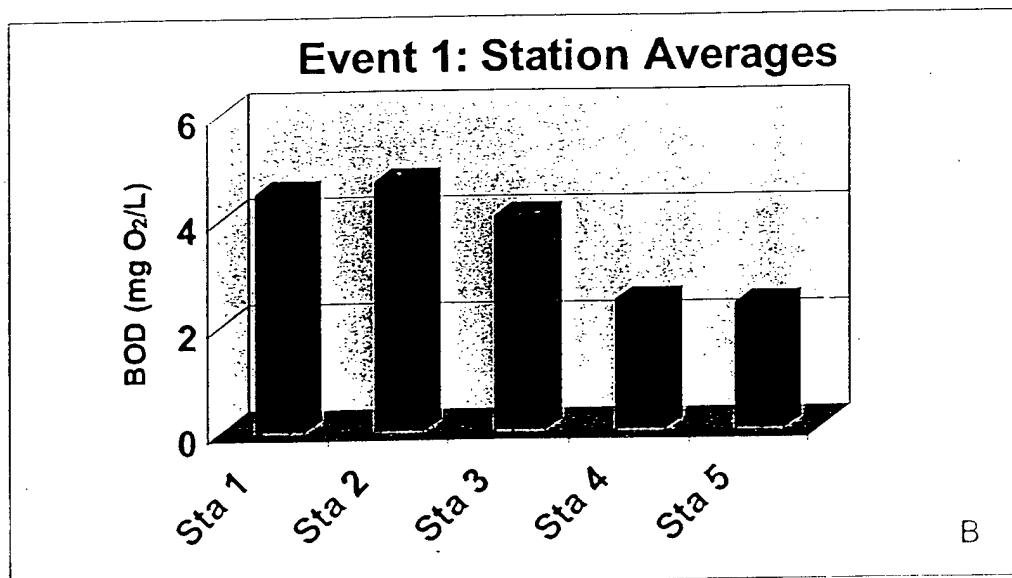
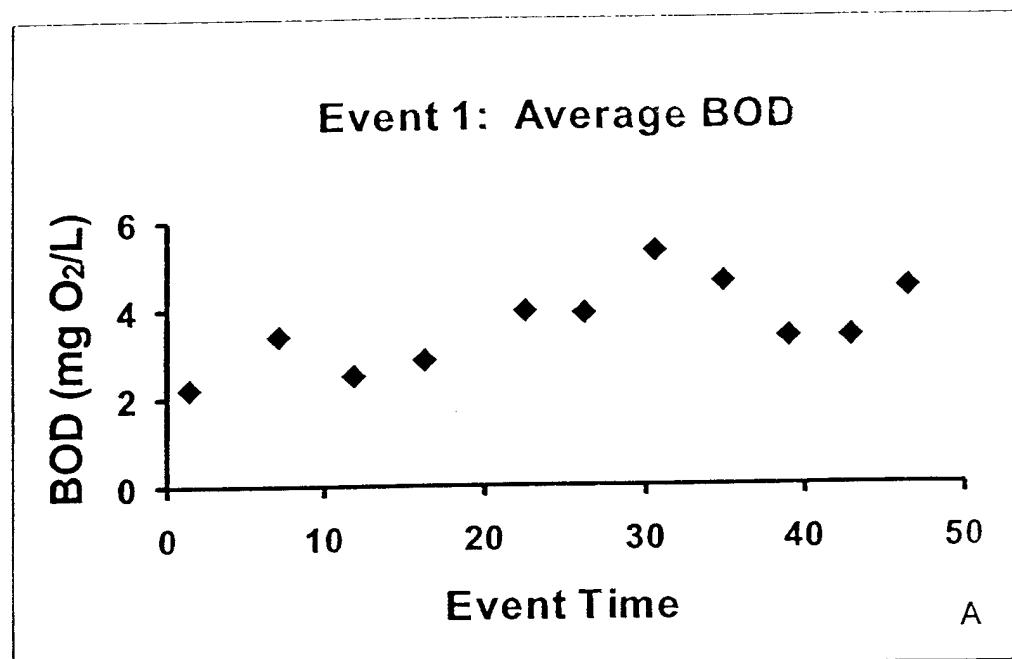
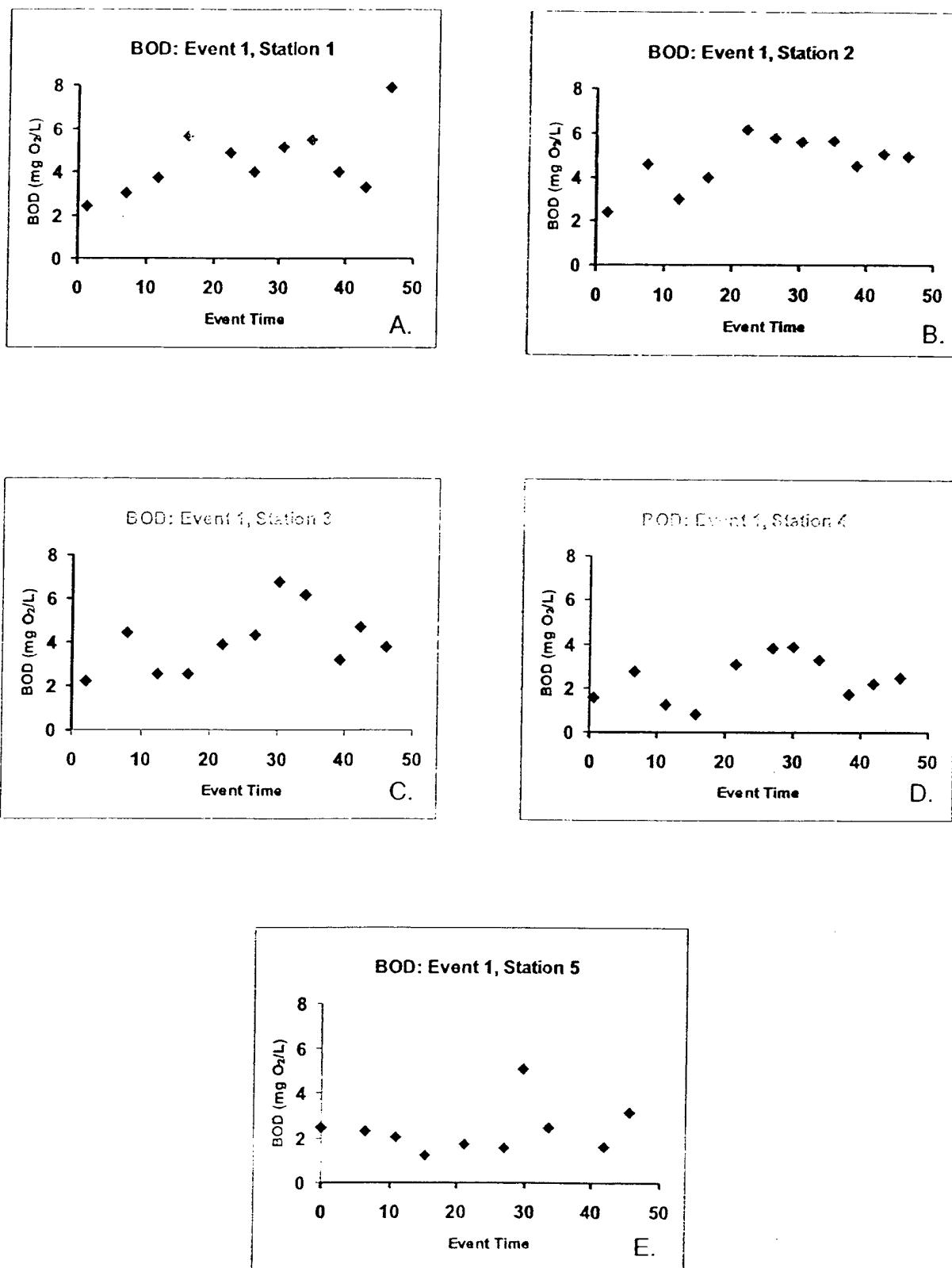


Figure 4: BOD, Event 1, Station Summary



# Figure 5: BOD, Event 1, Cycle Summary

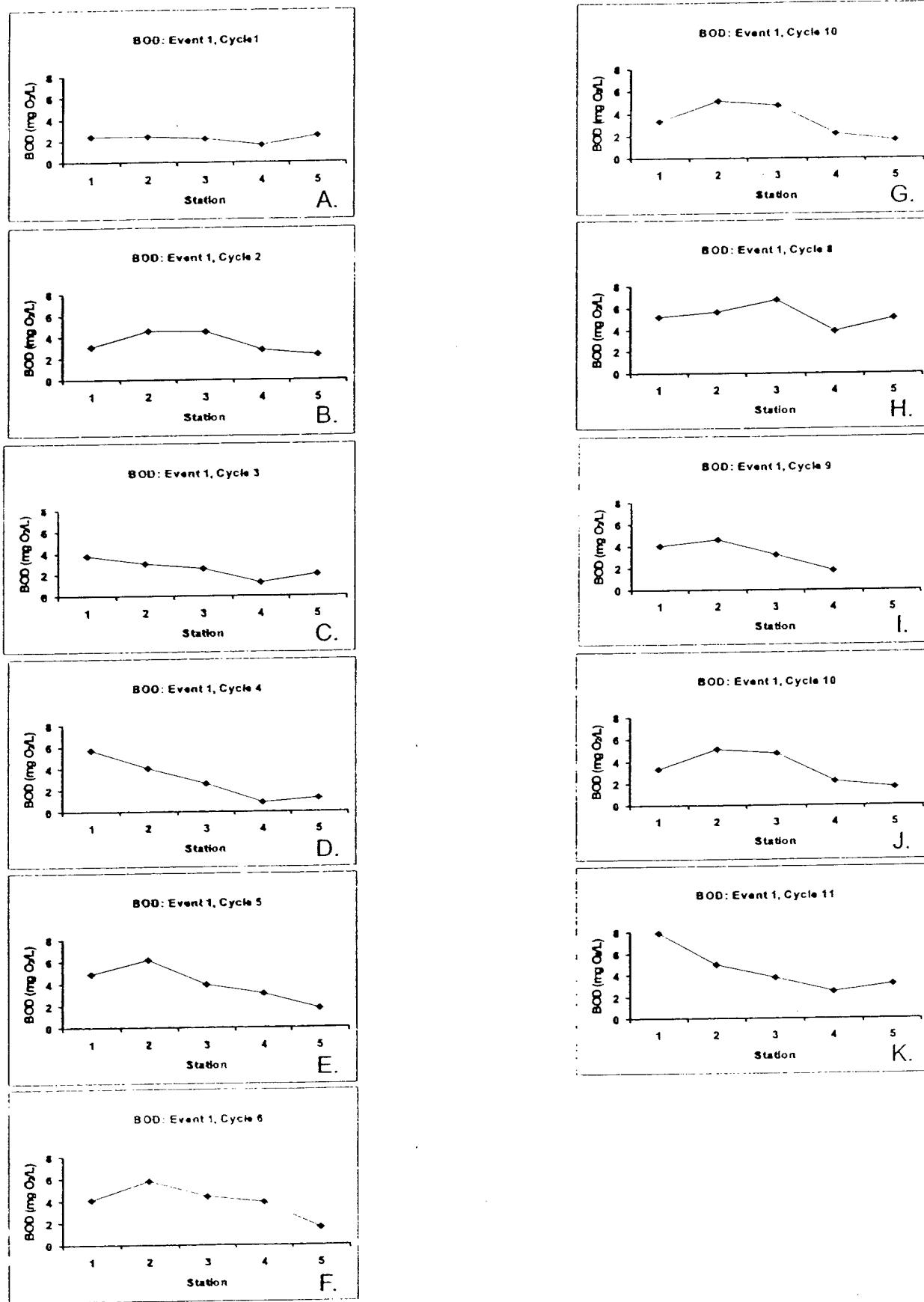


Figure 6: Suspended Solids, Event 1

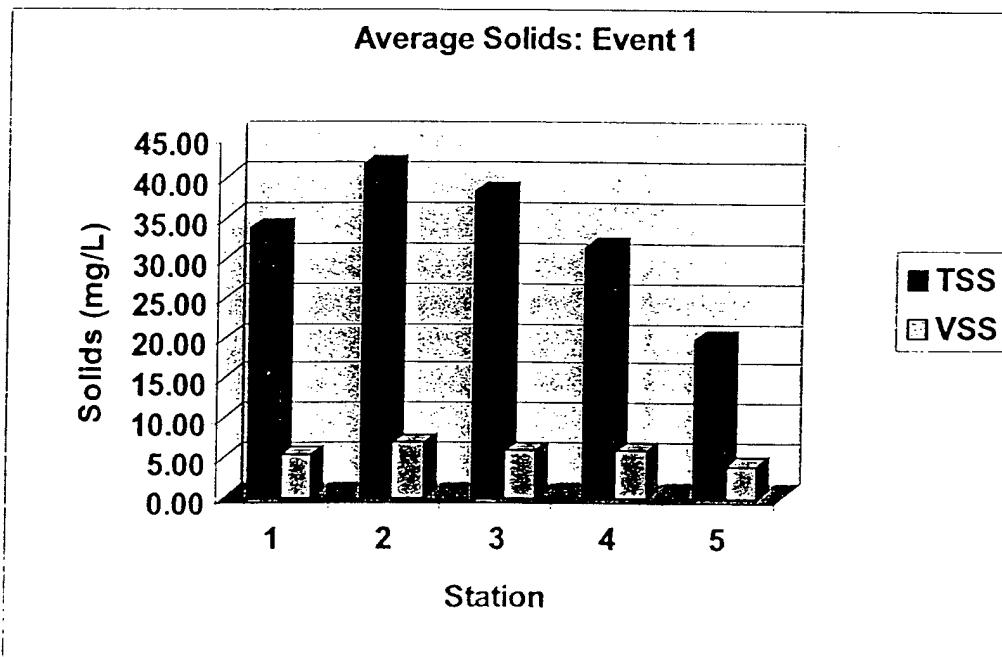
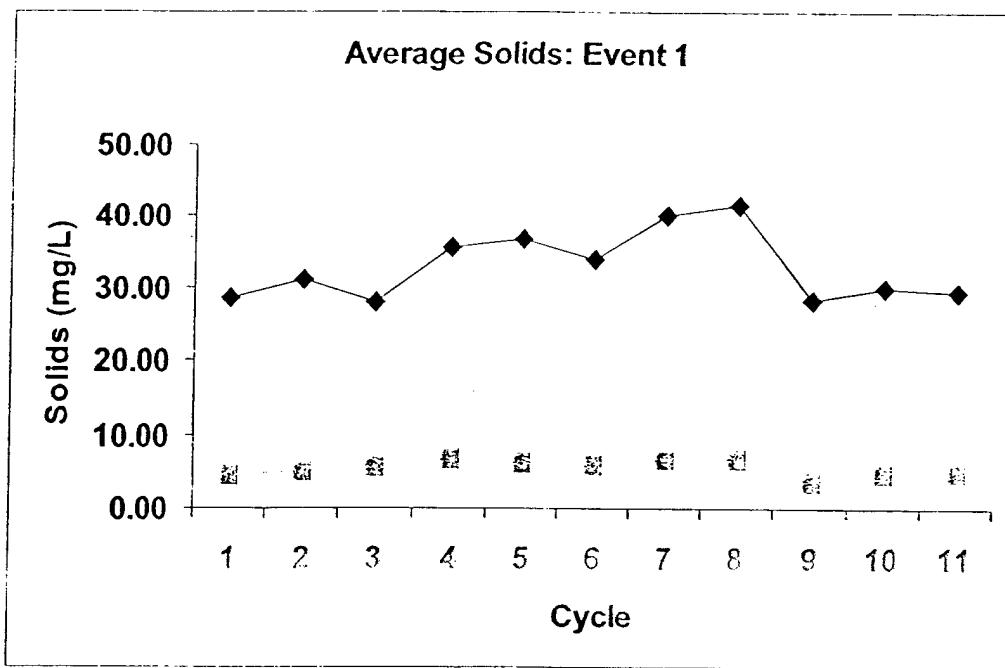
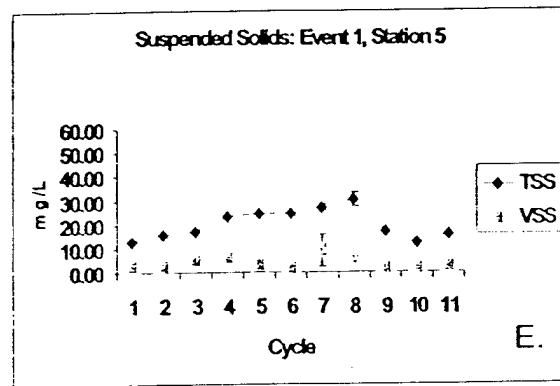
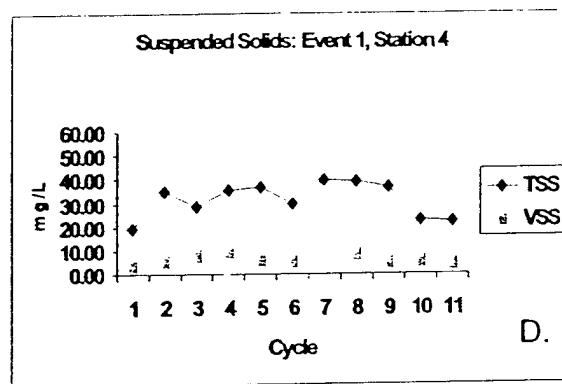
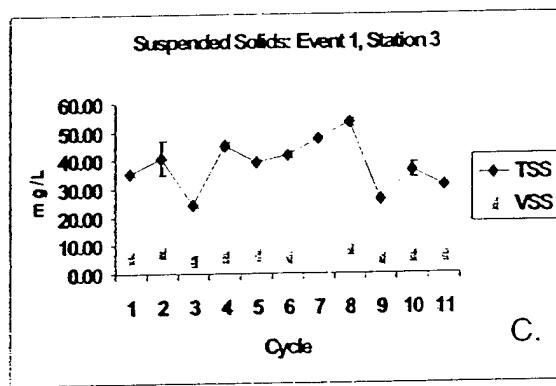
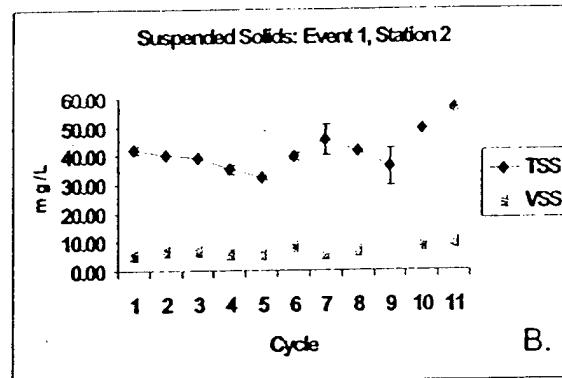
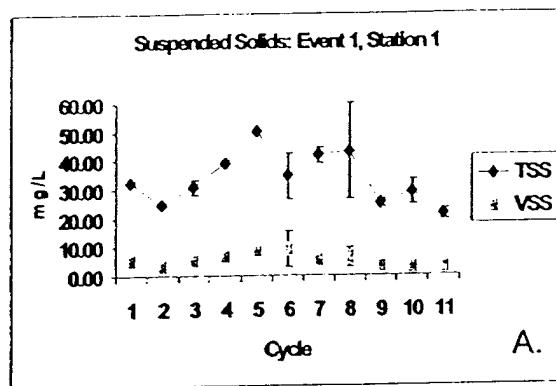


Figure 7: Suspended Solids, Event 1,  
Station Summary



# Figure 8: Suspended Solids, Event 1, Cycle Summary

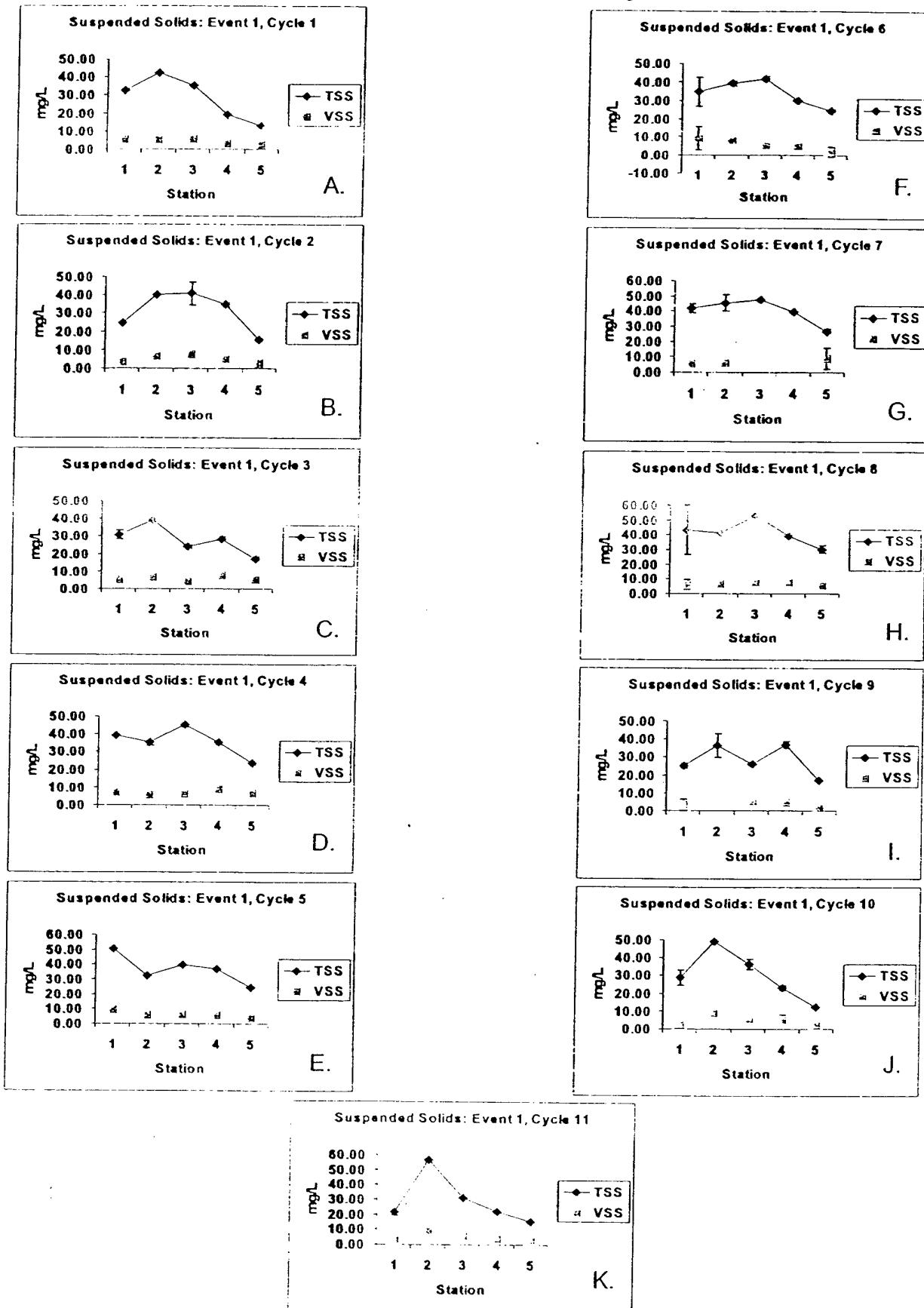
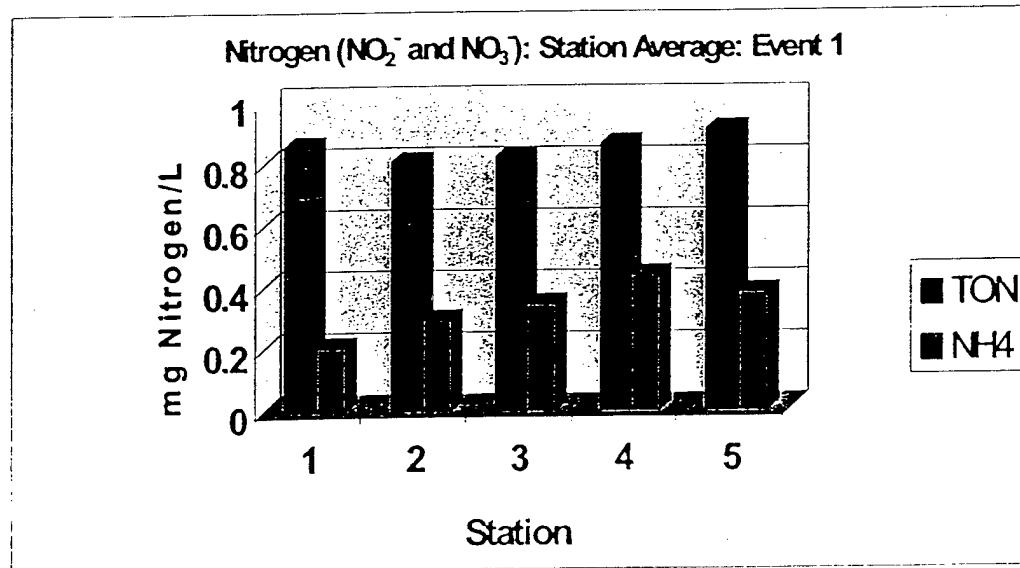
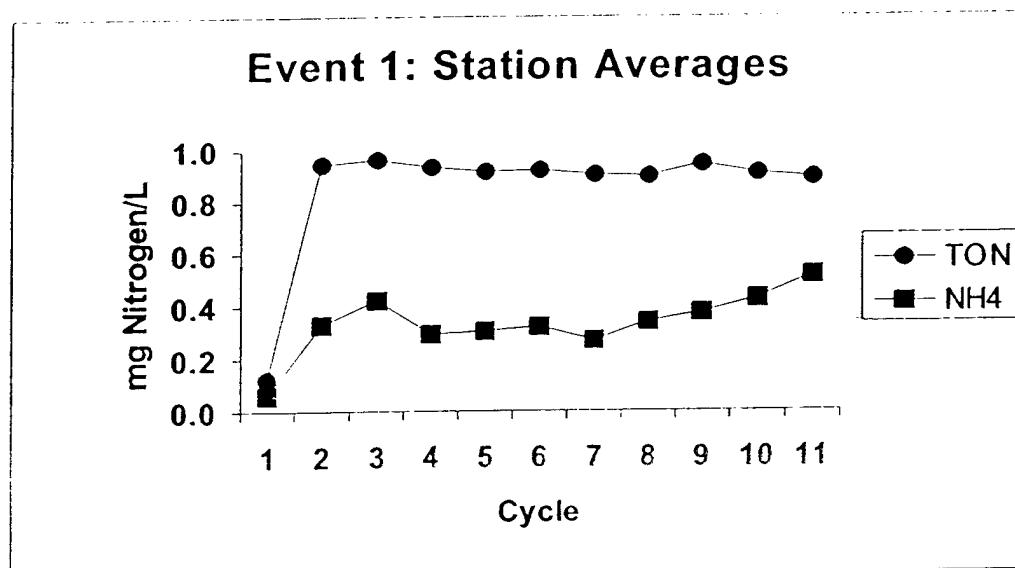
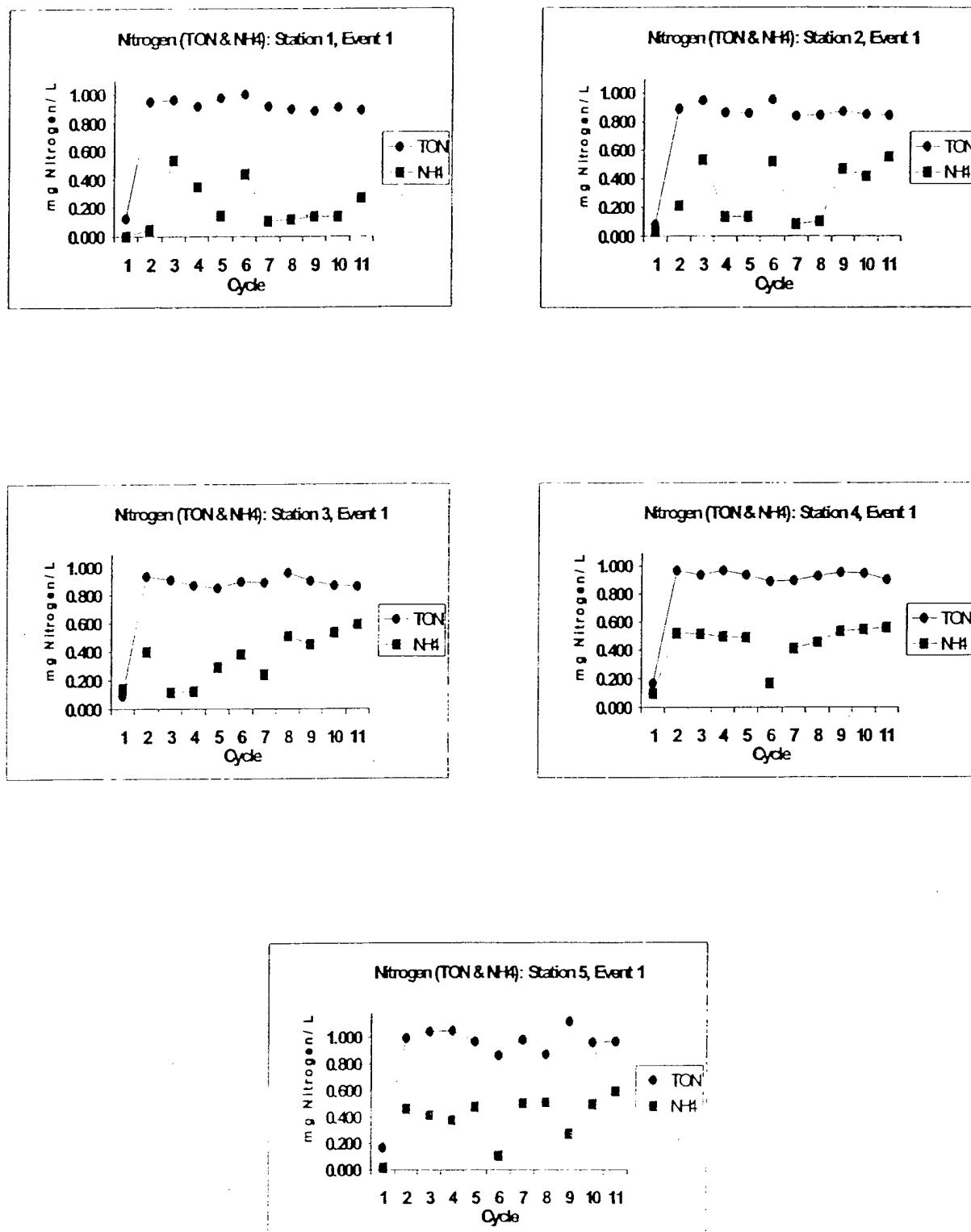


Figure 9: Nitrogen, Event 1



# Figure 10: Nitrogen, Event 1 Station Summary



# Figure 11: Nitrogen, Event 1 Cycle Summary

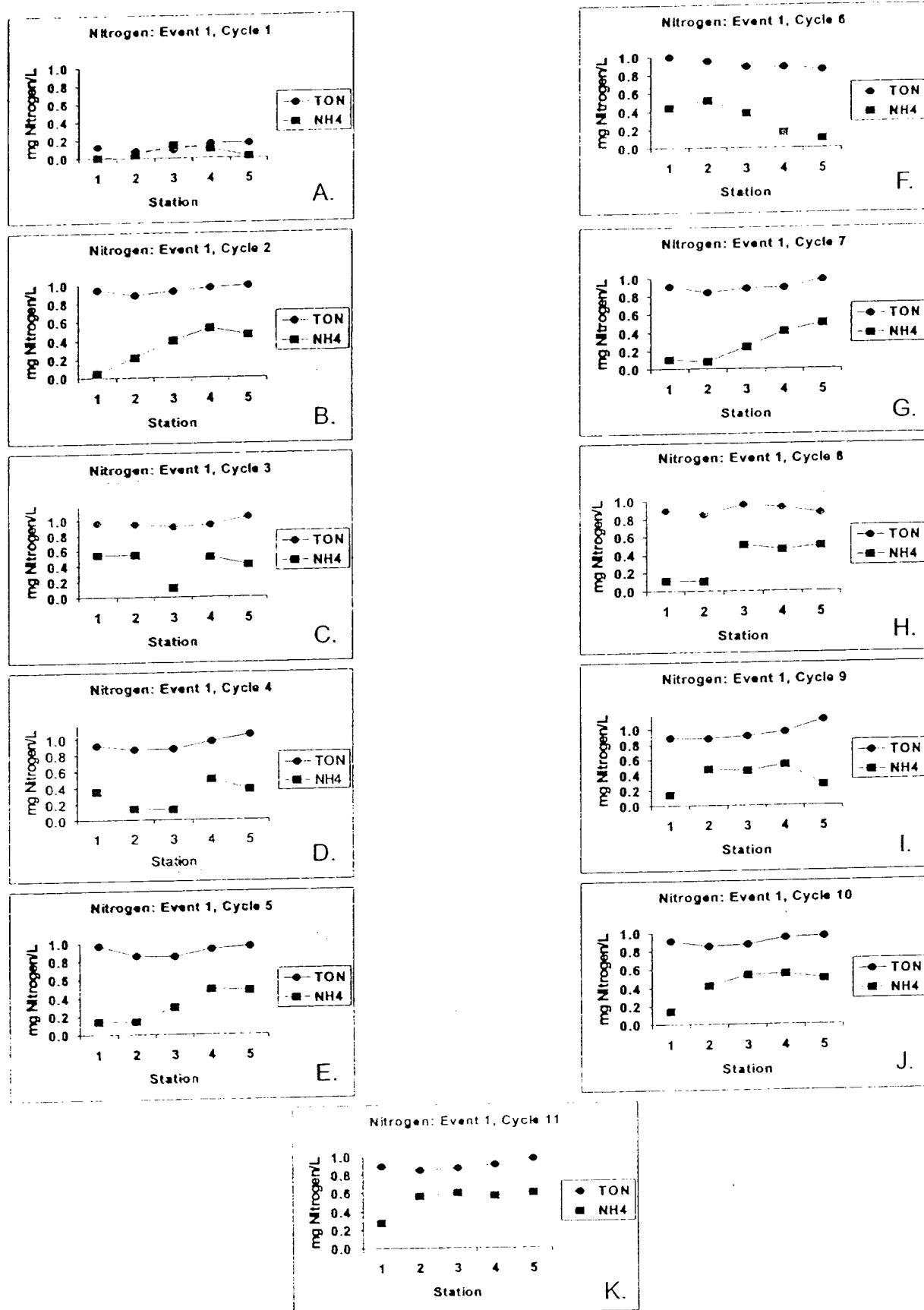
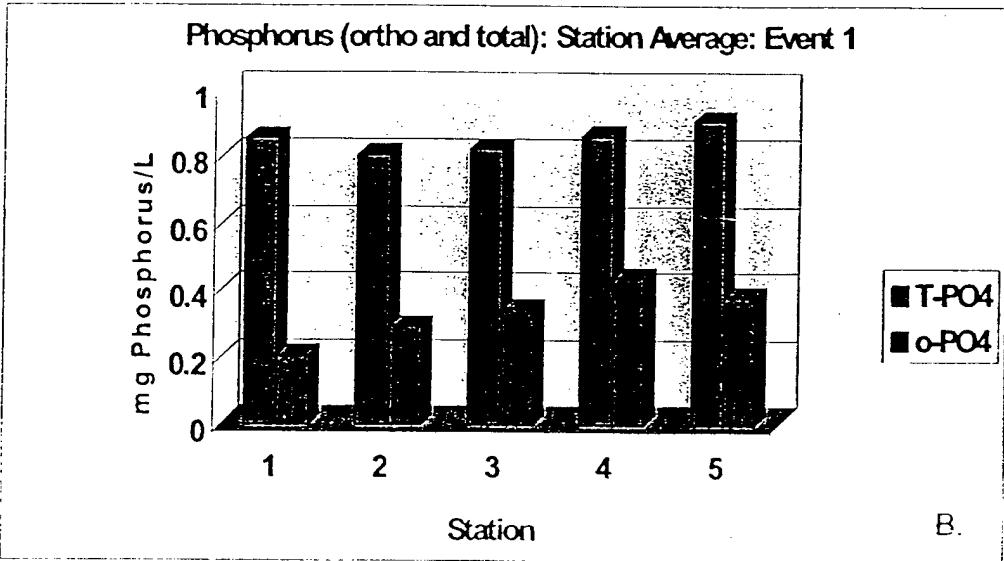
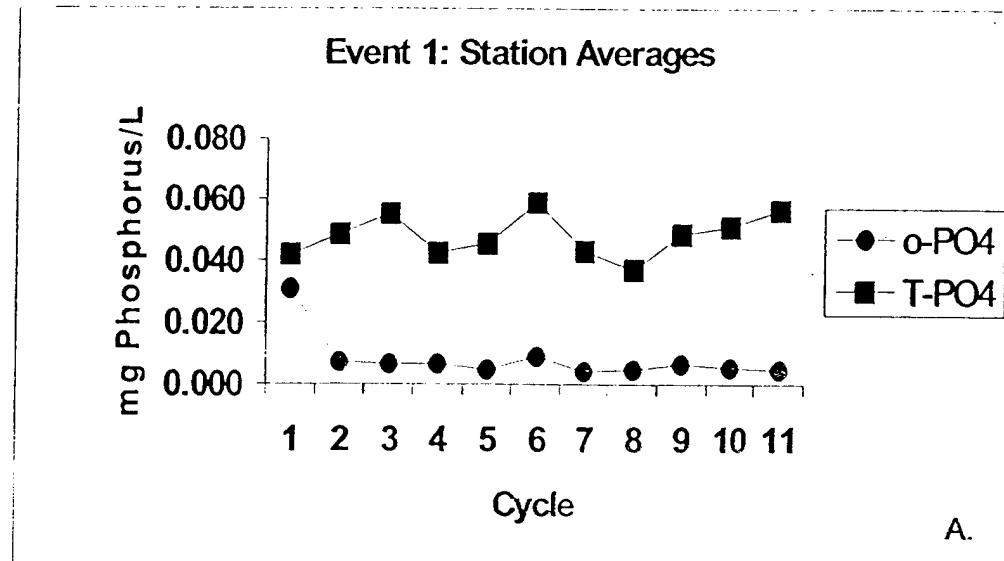
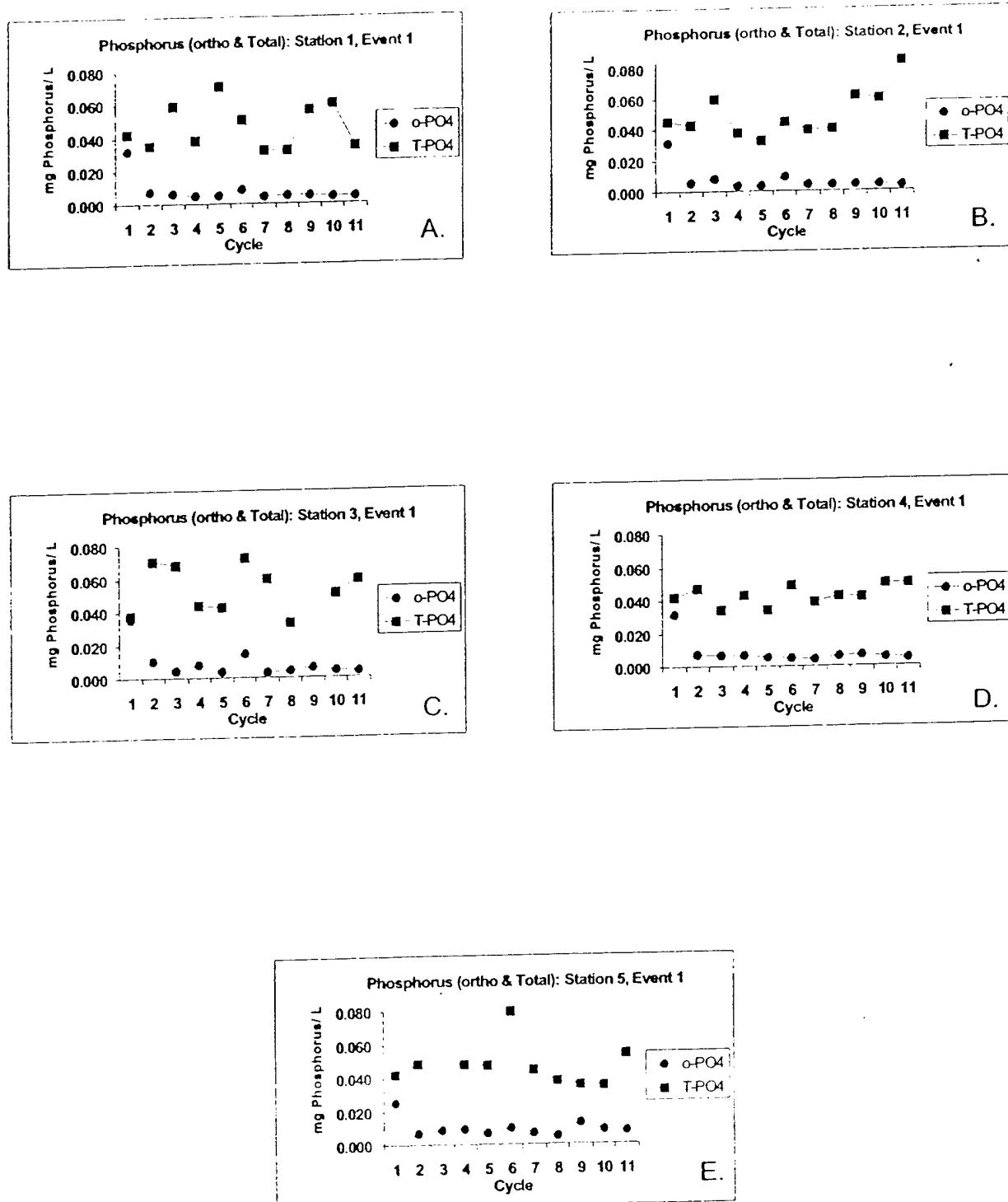


Figure 12: Phosphorus, Event 1



# Figure 13: Phosphorus, Event 1 Station Summary



# Figure 14: Phosphorus, Event 1 Cycle Summary

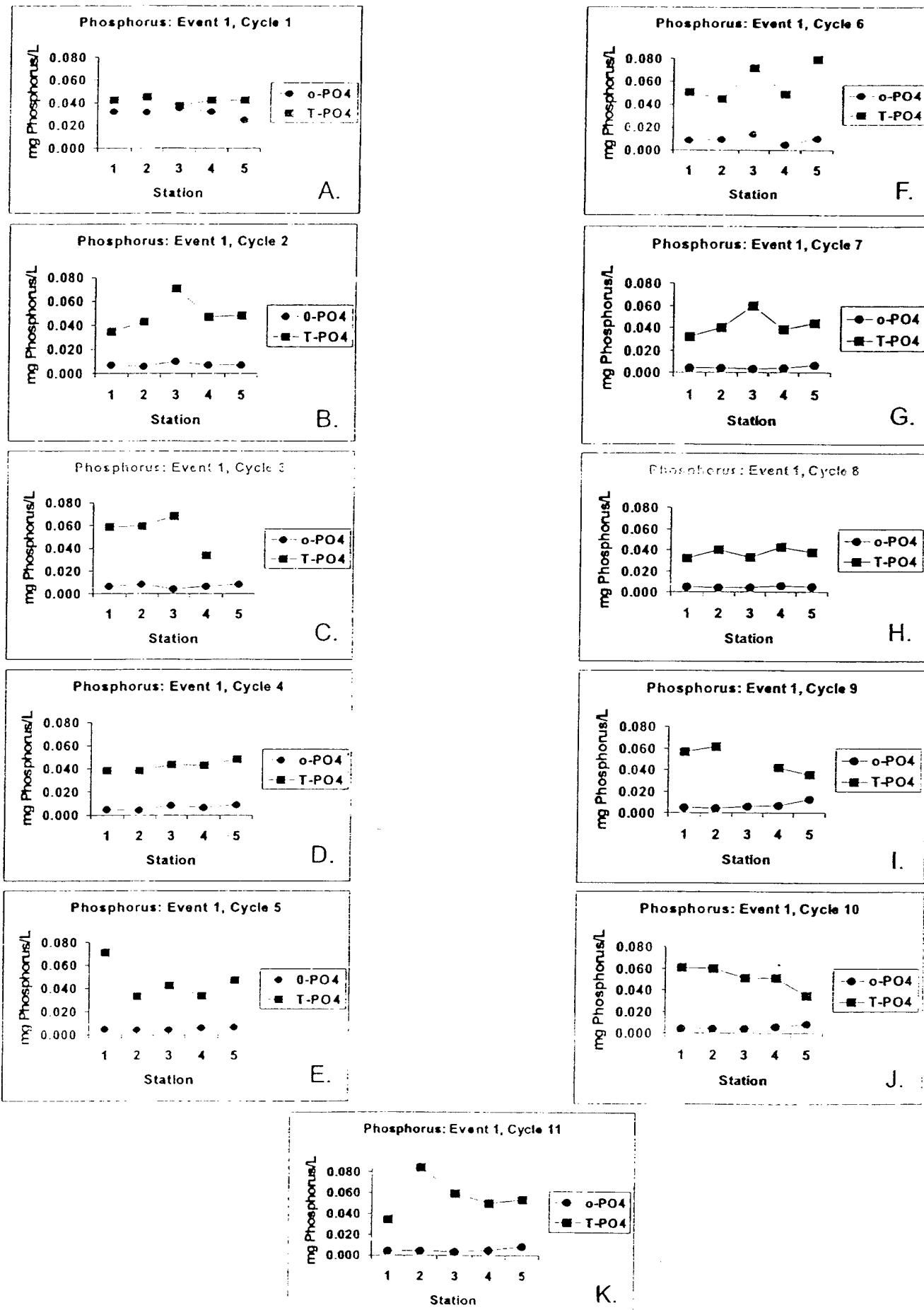
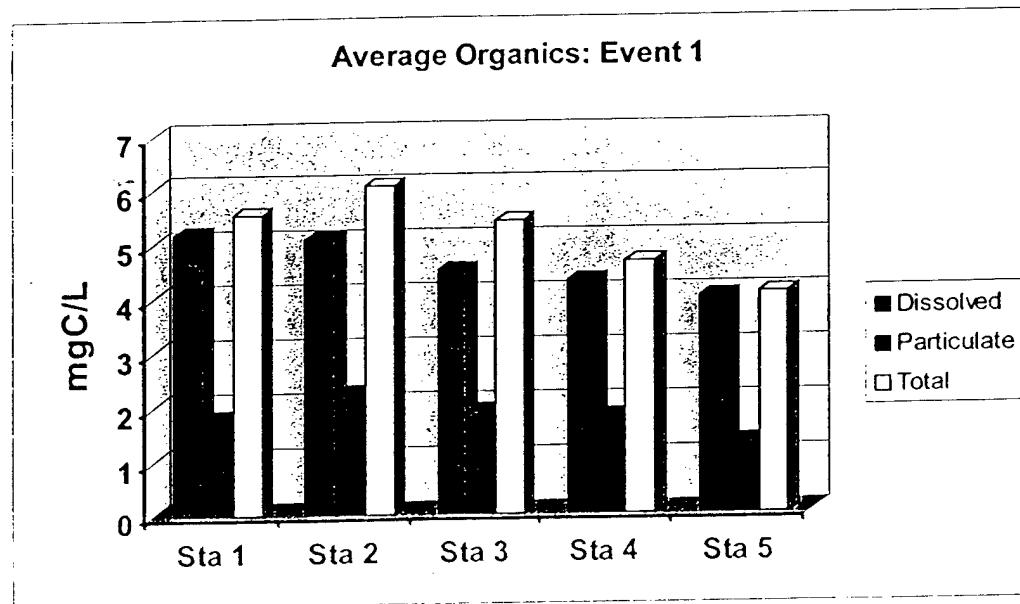
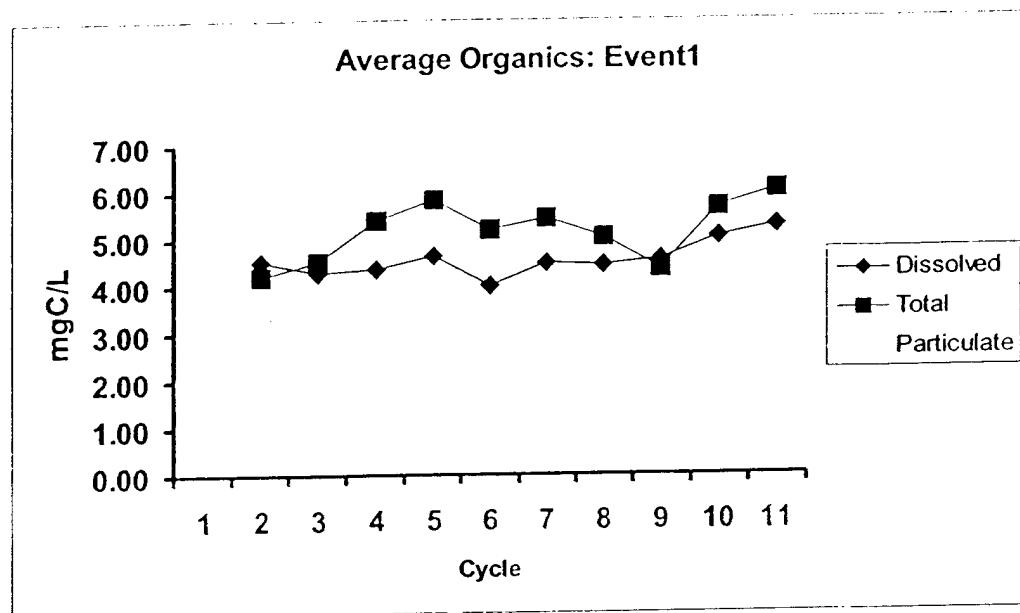
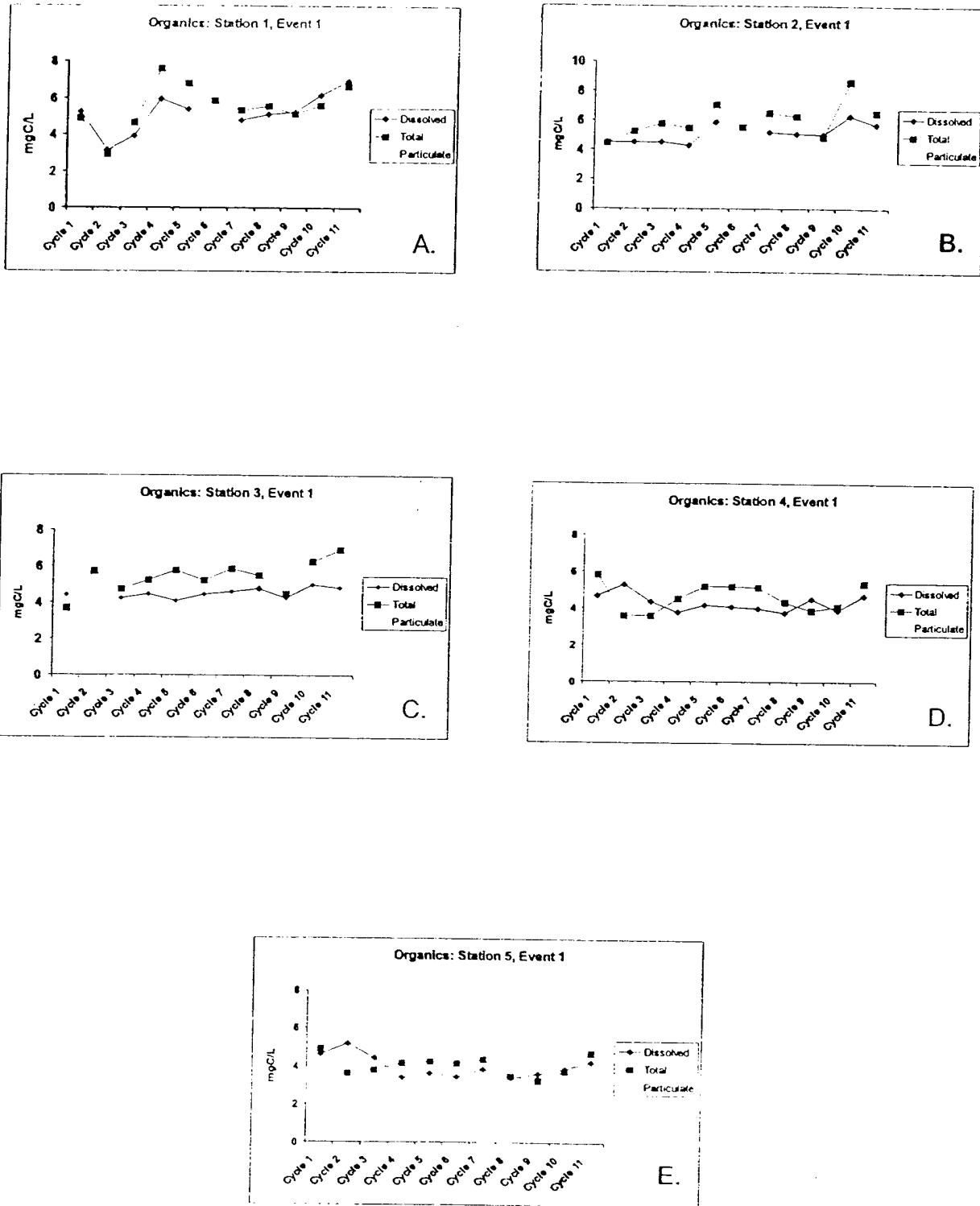


Figure 15: Event 1 Dissolved, Particulate and Total Organic Carbon



# Figure 16: Organics, Event 1, Station Summary



# Figure 17: Organics, Event 1, Cycle Summary

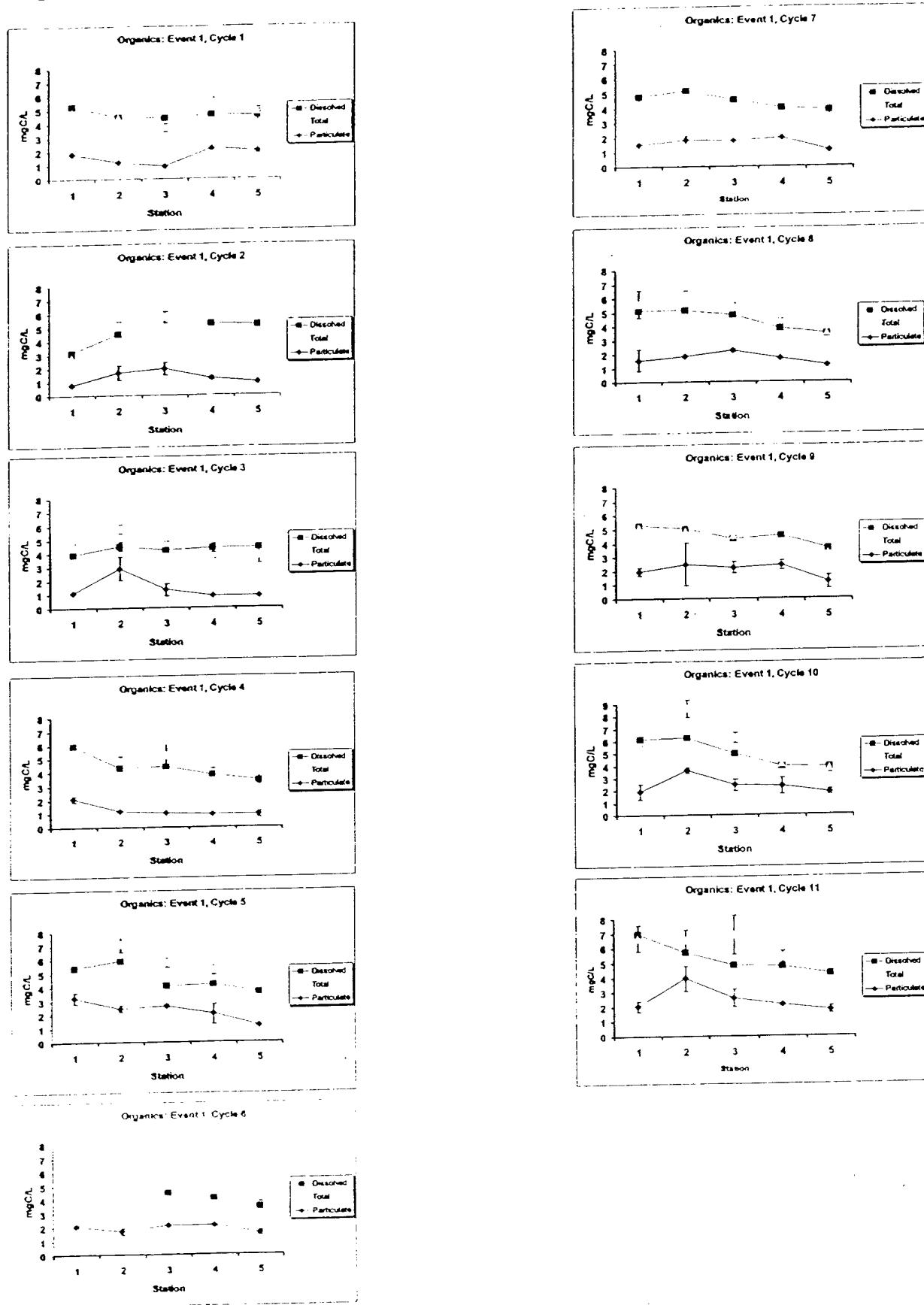


Figure 18: Event 1 Organics  
Method Comparison

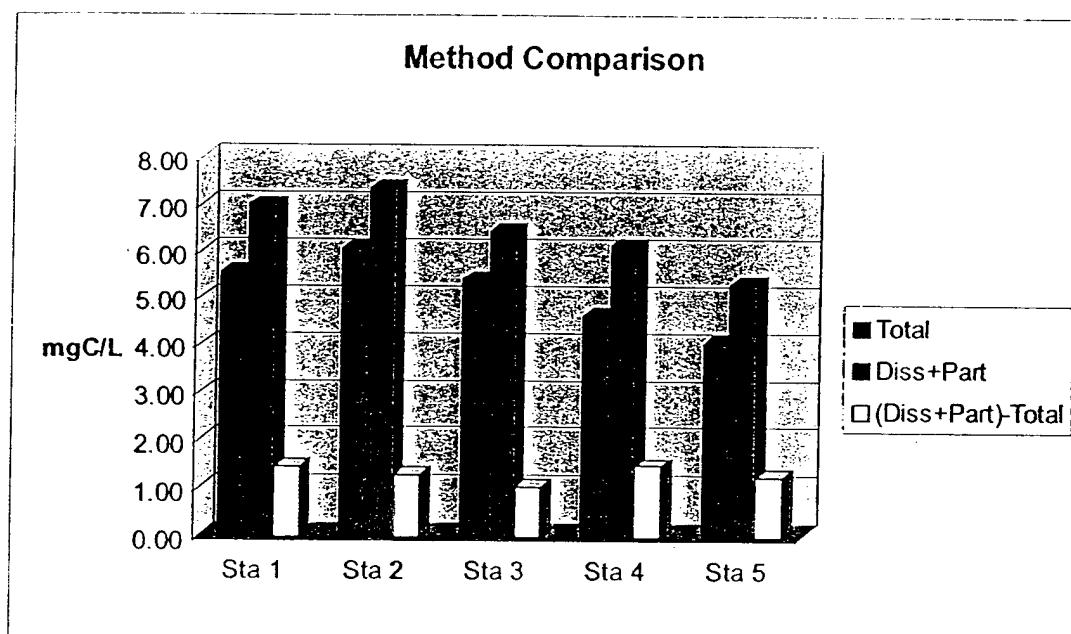


Figure 19: Percent Organic Carbon, Event 1

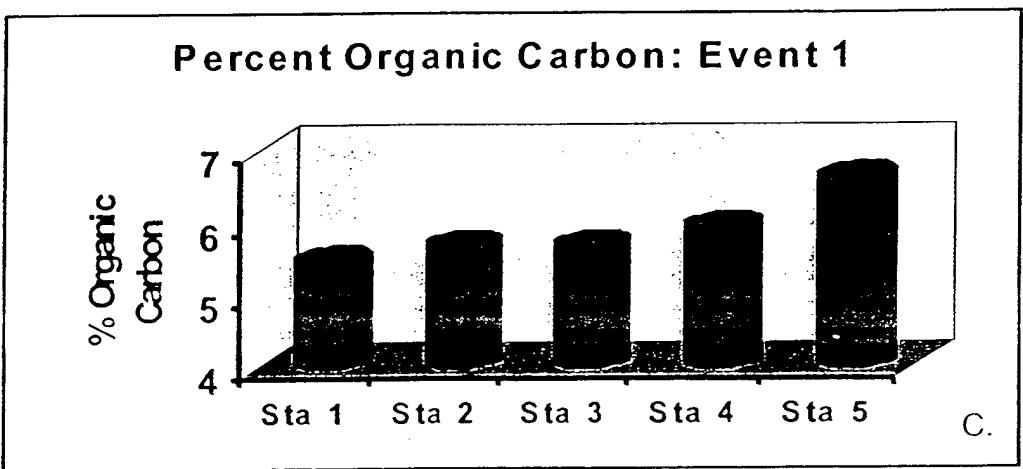
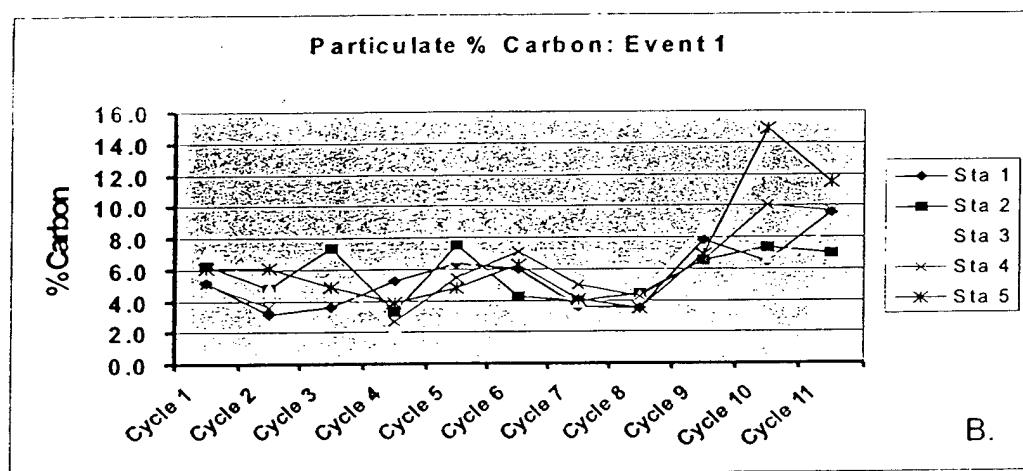
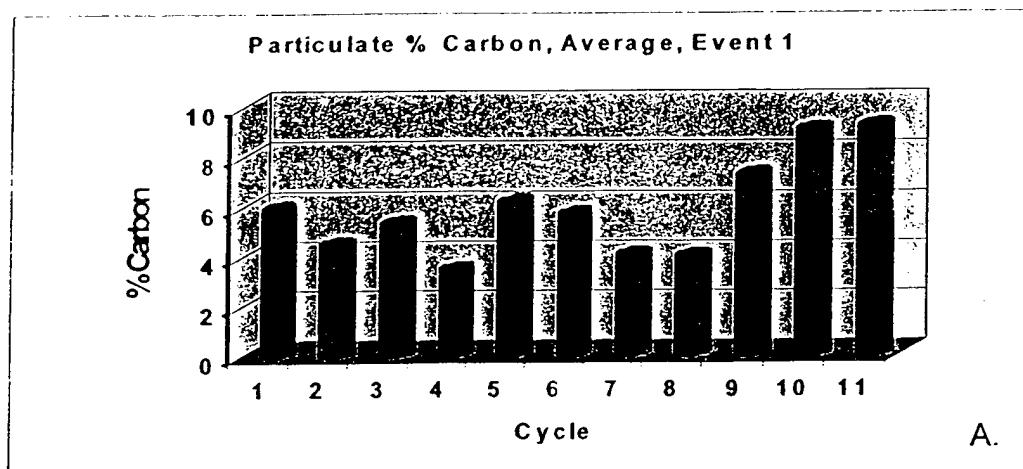


Figure 20: Total Kjeldahl Nitrogen (TKN), Event 1

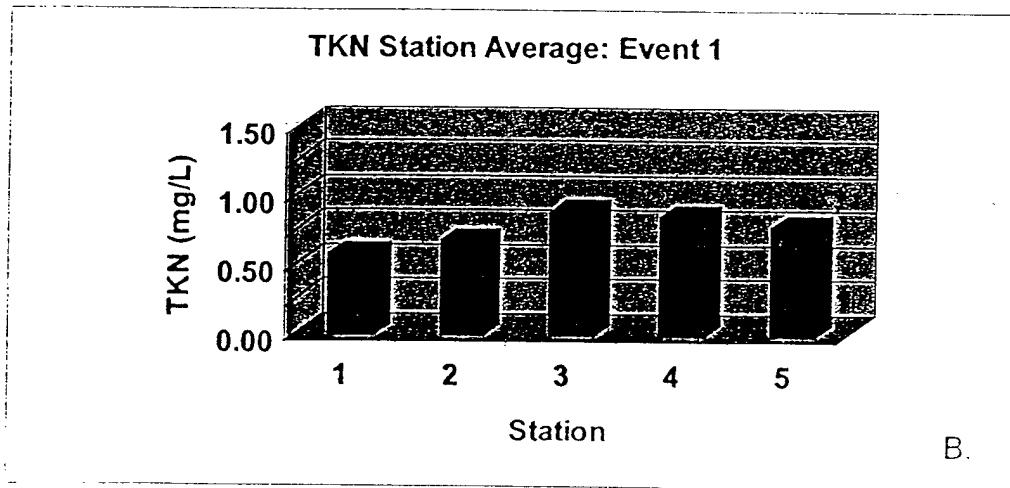
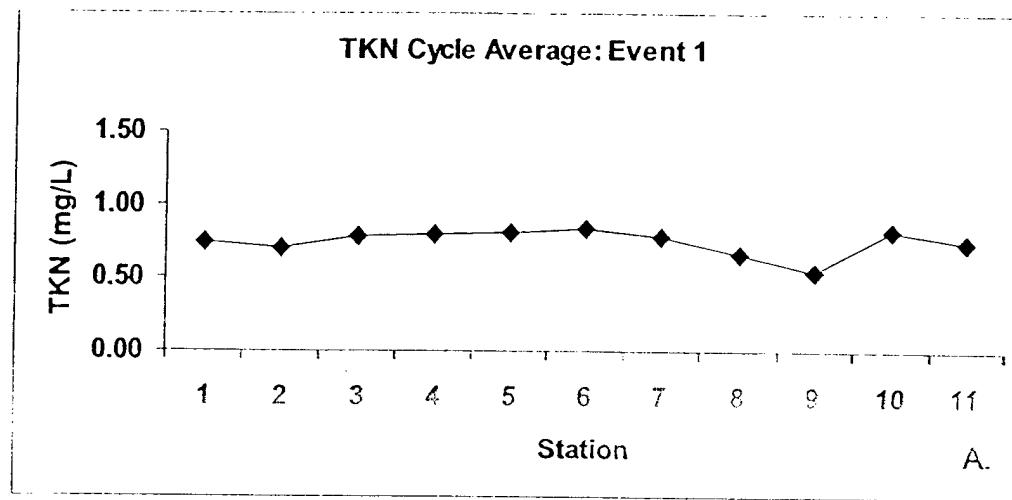


Figure 21: Total Kjeldahl Nitrogen (TKN)  
Event 1, Station Summary

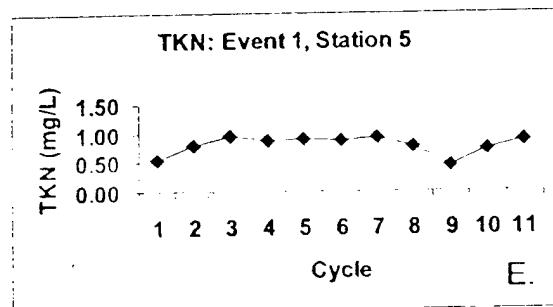
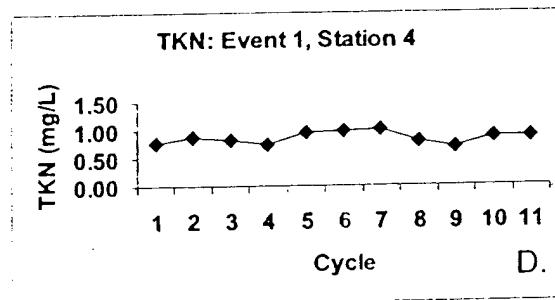
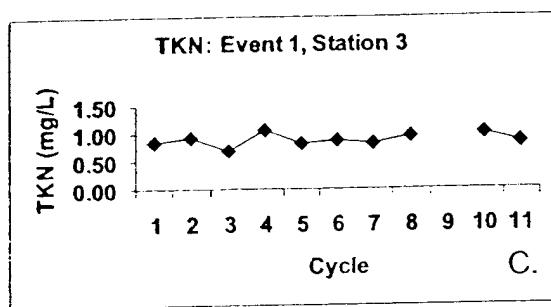
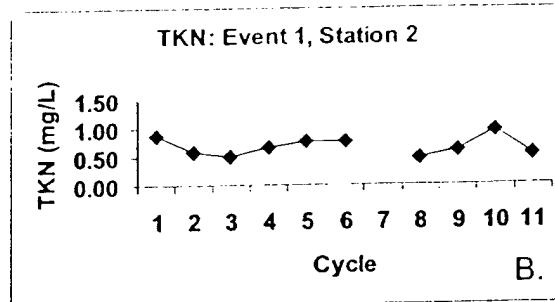
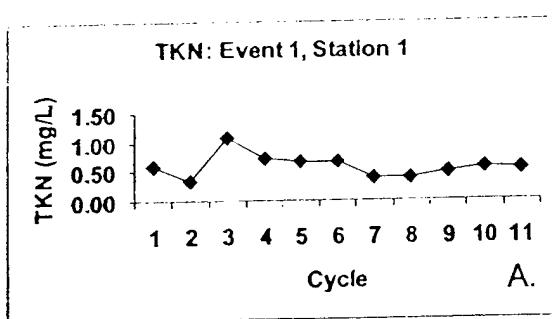


Figure 22: Total Kjeldahl Nitrogen (TKN)  
Event 1, Cycle Summary

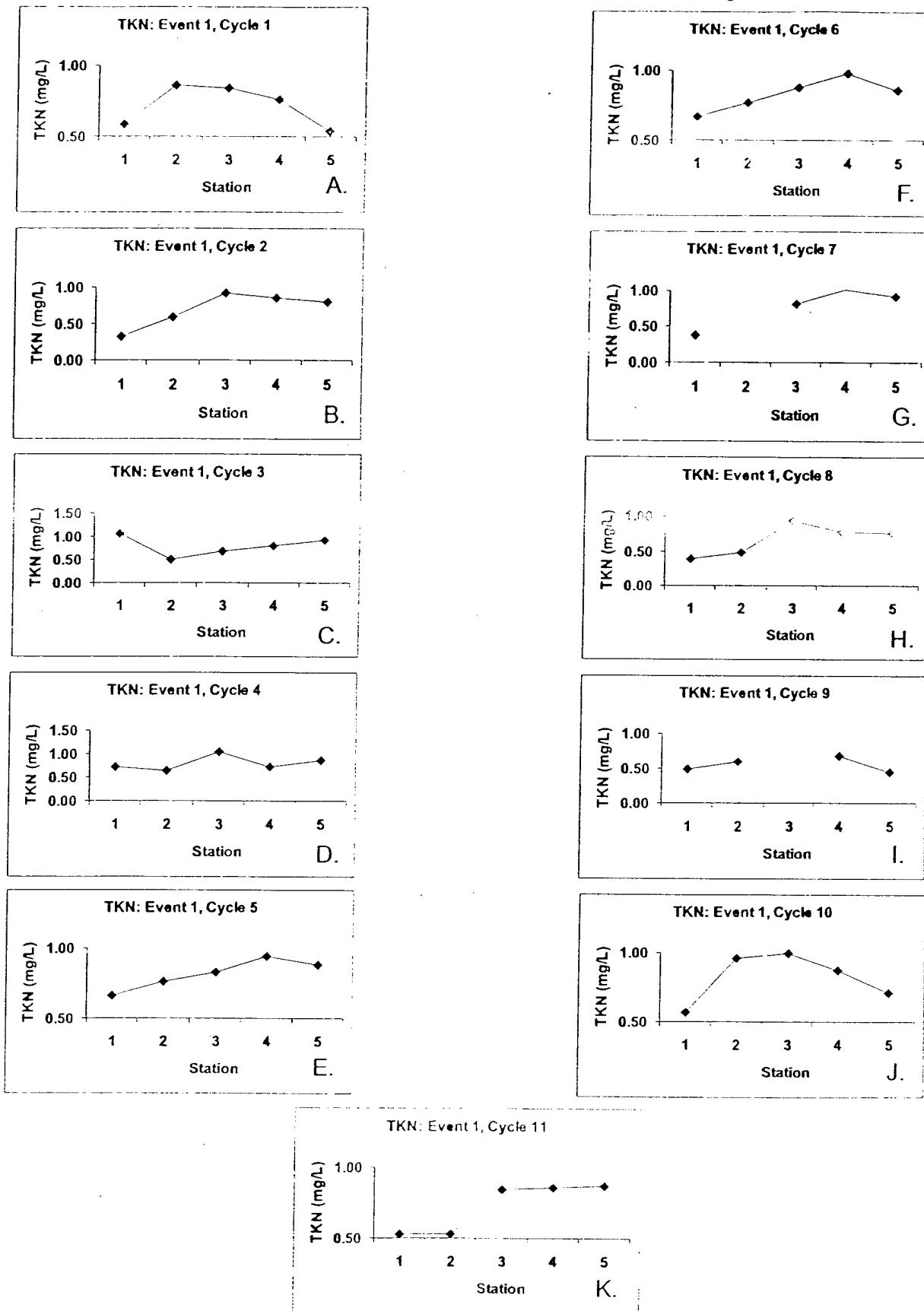


Figure 23: Water Quality, Event 1  
Station Summary

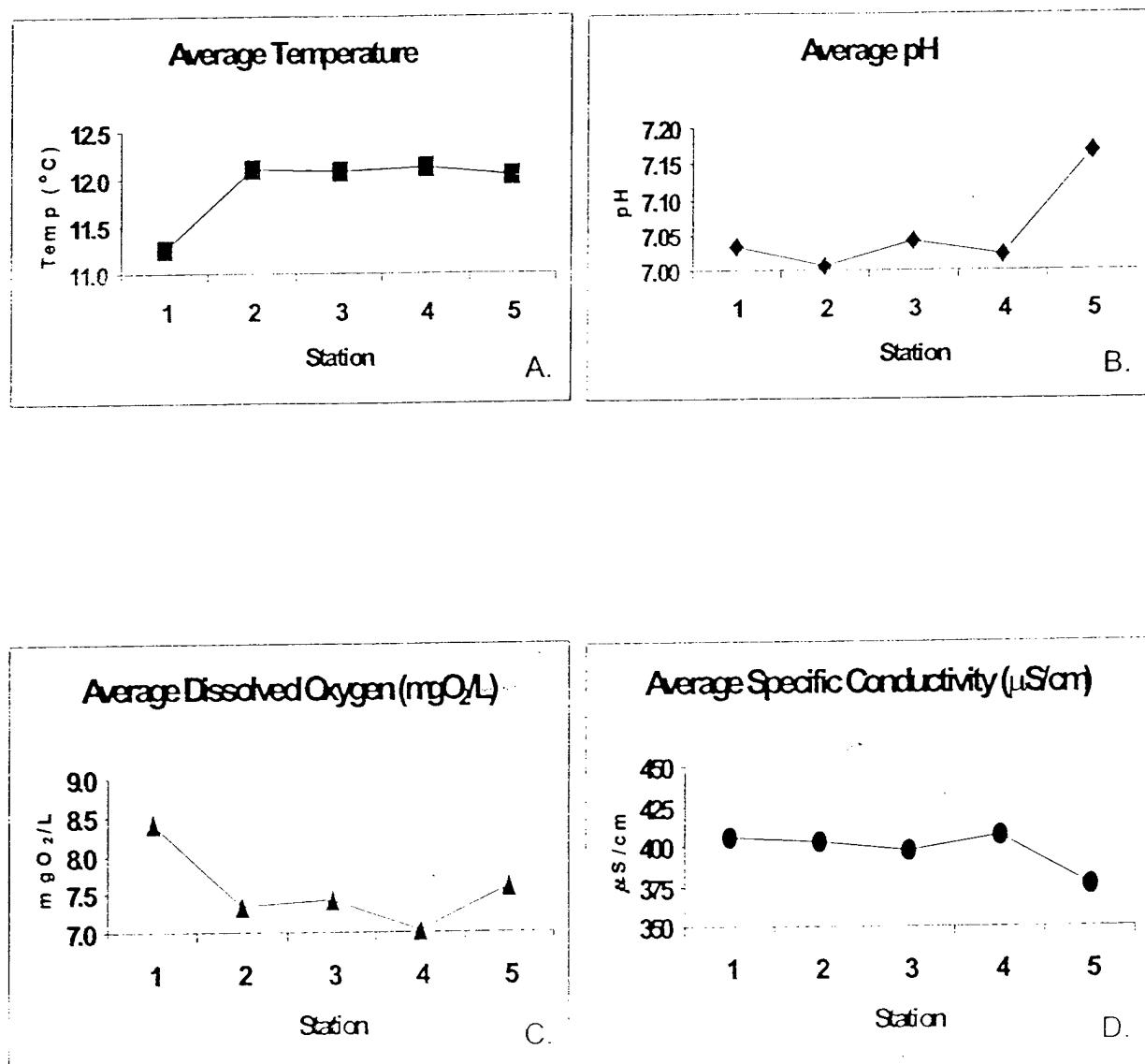
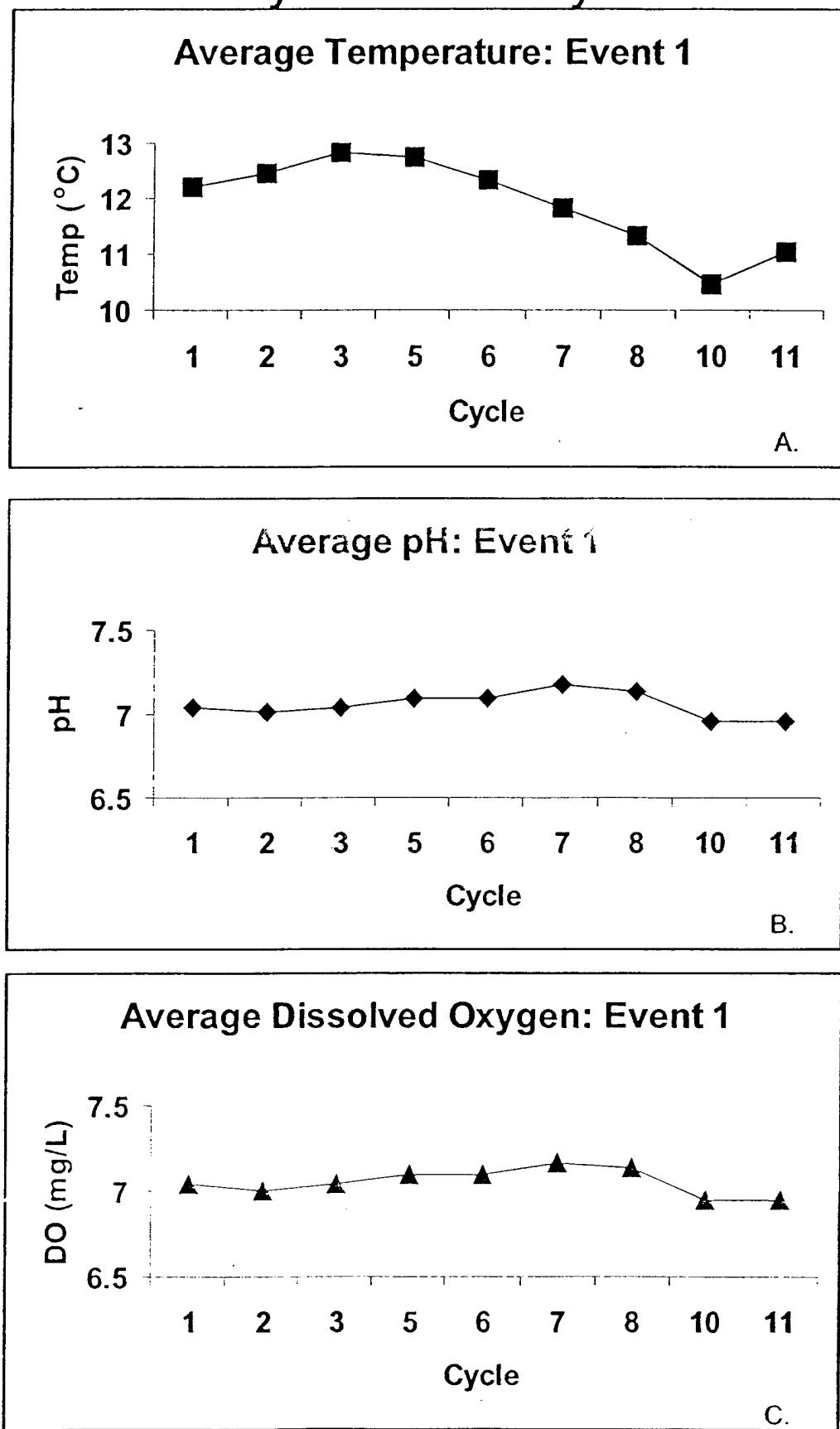


Figure 24: Water Quality, Event 1  
Cycle Summary



## TABLES

TABLE 1

1 of 2

## Summary Data for Biological Oxygen Demand

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Biological Oxygen Demand					
				DO (t0) mgO <sub>2</sub> L <sup>-1</sup>	SD	DO (t1) mgO <sub>2</sub> L <sup>-1</sup>	SD	Inc. Time days	BOD mgO <sub>2</sub> L <sup>-1</sup>
1	1	3/16/00 18:05	✓✓	10.67	0.16	8.27	0.31	4.9	2.40
1	2	3/16/00 18:25	✓✓	8.26	0.03	5.89	0.09	4.9	2.38
1	3	3/16/00 18:41	✓✓	8.04	0.15	5.84	0.04	4.9	2.20
1	4	3/16/00 17:20	✓✓	8.51	0.20	6.94	0.00	5.0	1.57
1	5	3/16/00 16:40	✓✓	10.84	0.08	8.37	0.04	4.9	2.46
2	1	3/16/00 23:50	✓✓	12.34	0.03	9.34	0.00	5.2	3.01
2	2	3/17/00 0:14	✓✓	10.27	0.12	5.73	0.25	5.2	4.55
2	3	3/17/00 0:32	✓✓	9.55	0.06	5.12	0.11	5.2	4.43
2	4	3/16/00 23:23	✓☒	7.91	0.16	5.17		5.2	2.74
2	5	3/16/00 23:08	✓✓	8.81	0.27	6.49	0.55	5.2	2.32
3	1	3/17/00 4:30	✓✓	10.72	0.07	7.01	0.03	5.0	3.70
3	2	3/17/00 4:50	✓✓	8.23	0.03	5.23	0.61	5.0	3.00
3	3	3/17/00 5:05	✓✓	8.00	0.31	5.44	0.10	5.0	2.56
3	4	3/17/00 3:54	✓✓	7.77	0.07	6.52	0.13	5.0	1.25
3	5	3/17/00 3:36	✓✓	8.87	0.13	6.87	0.23	5.0	2.01
4	1	3/17/00 8:56	✓✓	9.33	0.03	3.66	0.08	4.9	5.67
4	2	3/17/00 9:17	✓✓	9.65	0.11	5.68	0.27	4.9	3.97
4	3	3/17/00 9:35	✓✓	9.19	0.06	6.63	0.33	4.9	2.56
4	4	3/17/00 8:24	✓✓	7.88	0.13	7.05	0.83	5.0	0.83
4	5	3/17/00 8:03	✓✓	9.22	0.25	8.00	0.67	5.0	1.22
5	1	3/17/00 15:08	✓✓	10.17	0.01	5.29	0.18	4.9	4.88
5	2	3/17/00 14:50	✓☒	9.06	0.12	2.90		4.9	6.16
5	3	3/17/00 14:30	✓✓	9.18	0.04	5.29	0.09	4.9	3.89
5	4	3/17/00 14:10	✓✓	8.53	0.17	5.47	0.10	5.0	3.06
5	5	3/17/00 13:50	✓✓	8.32	0.07	6.59	0.06	5.0	1.73
6	1	3/17/00 18:50	✓✓	9.88	0.07	5.88	2.70	4.9	4.00
6	2	3/17/00 19:00	✓✓	9.08	0.19	3.29	0.35	4.9	5.79
6	3	3/17/00 19:15	✓✓	8.90	0.05	4.56	0.77	4.9	4.34
6	4	3/17/00 19:30	✓✓	9.55	1.02	5.75	0.09	4.9	3.81
6	5	3/17/00 19:40	✓✓	9.09	0.02	7.54	0.15	4.9	1.55

✓✓ : Duplicate measured for t0 and t1

✓☒ : Duplicate measured for t0 only

Note : Standard deviation calculation based on n=2

TABLE 1

2 of 2

## Summary Data for Biological Oxygen Demand

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Biological Oxygen Demand					
				DO (t0) mgO <sub>2</sub> L <sup>-1</sup>	SD	DO (t1) mgO <sub>2</sub> L <sup>-1</sup>	SD	Inc. Time days	BOD mgO <sub>2</sub> L <sup>-1</sup>
7	1	3/17/00 23:20	✓✓	12.24	0.20	7.08	0.43	5.2	5.16
7	2	3/17/00 23:05	✓✓	8.92	0.01	3.32	0.20	5.2	5.60
7	3	3/17/00 22:50	✓✓	8.83	0.04	2.08	0.71	5.2	6.75
7	4	3/17/00 22:35	✓✓	8.80	0.11	4.94	0.29	5.2	3.87
7	5	3/17/00 22:20	✓☒	8.38	0.17	3.34		5.2	5.04
8	1	3/18/00 3:35	✓✓	11.08	0.24	5.62	0.82	5.0	5.46
8	2	3/18/00 3:55	✓✓	8.70	0.09	3.03	0.09	5.0	5.67
8	3	3/18/00 2:51	✓✓	8.31	0.28	2.13	1.23	5.0	6.18
8	4	3/18/00 2:35	✓✓	8.32	0.09	5.05	0.88	5.0	3.27
8	5	3/18/00 2:20	✓✓	8.47	0.24	6.00	0.33	5.0	2.47
9	1	3/18/00 7:40	✓✓	10.61	0.02	6.63	0.19	4.9	3.98
9	2	3/18/00 7:20	✓✓	7.85	0.21	3.32	0.04	5.0	4.54
9	3	3/18/00 8:00	☒✓	8.72		5.53	0.33	5.0	3.19
9	4	3/18/00 7:00	✓✓	7.72	0.18	5.98	0.02	5.0	1.74
9	5	3/18/00 6:45		NA		NA			
10	1	3/18/00 11:30	✓✓	11.19	0.02	7.90	0.42	5.1	3.29
10	2	3/18/00 11:13	✓✓	8.67	0.21	3.59	0.30	5.1	5.08
10	3	3/18/00 10:57	✓✓	7.94	0.02	3.25	0.12	5.0	4.70
10	4	3/18/00 10:36	✓✓	8.13	0.27	5.95	0.05	5.0	2.18
10	5	3/18/00 10:30	✓✓	8.82	0.25	7.20	0.07	5.1	1.62
11	1	3/18/00 15:10	✓✓	11.09	0.04	3.21	0.31	4.9	7.88
11	2	3/18/00 14:55	✓✓	8.39	0.06	3.42	0.09	4.9	4.97
11	3	3/18/00 14:40	✓✓	8.12	0.29	4.35	0.16	4.9	3.76
11	4	3/18/00 14:30	✓☒	8.25	0.05	5.76		4.9	2.49
11	5	3/18/00 14:15	✓✓	9.21	0.24	6.06	0.56	4.9	3.15

✓✓ : Duplicate measured for t0 and t1

✓☒ : Duplicate measured for t0 only

☒✓ : Duplicate measured for t1 only

NA : Data not available

Note : Standard deviation calculation based on n=2

TABLE 2

1 of 2

## Summary Data for Suspended Solids

Event 1: 3/16/2000 18:05 - 3/18/2000 14:15

Cycle	Station	Time Collected	Suspended Solids					
			Ave. TSS mg/L	TSS Sta. Dev.	Duplicate	Ave. VSS mg/L	VSS Sta. Dev.	Duplicate
1	1	3/16/00 18:05	33.20/31.78	1.02	✓	5.79/4.69	0.78	✓
1	2	3/16/00 18:25	42.26	1.43	✓	5.14	1.97	✓
1	3	3/16/00 18:41	35.34	0.75	✓	5.62	0.26	✓
1	4	3/16/00 17:20	19.26	2.65	✓	3.48	0.82	✓
1	5	3/16/00 16:40	12.98	0.82	✓	2.72	0.34	✓
2	1	3/16/00 23:50	24.61	0.39	✓	3.51	0.59	✓
2	2	3/17/00 0:14	40.00			6.67		
2	3	3/17/00 0:32	40.81	6.18	✓	7.34		
2	4	3/16/00 23:23	34.78	1.28	✓	5.38	1.26	✓
2	5	3/16/00 23:08	15.51	0.98	✓	2.61	0.78	✓
3	1	3/17/00 5:05	30.87	2.65	✓	5.20	1.41	✓
3	2	3/17/00 4:50	39.37	0.18	✓	6.74	0.02	✓
3	3	3/17/00 4:30	24.08	0.75	✓	4.27	0.04	✓
3	4	3/17/00 3:54	28.50	1.08	✓	7.54	1.38	✓
3	5	3/17/00 3:36	17.14	1.08	✓	5.00	2.19	✓
4	1	3/17/00 8:56	39.10	0.57	✓	6.93	0.49	✓
4	2	3/17/00 9:17	35.16	1.70	✓	5.60	0.44	✓
4	3	3/17/00 9:35	45.22	1.16	✓	6.04	0.62	✓
4	4	3/17/00 8:24	35.27	1.13	✓	9.18	0.35	✓
4	5	3/17/00 8:03	23.36	0.61	✓	6.59	0.19	✓
5	1	3/17/00 15:08	50.58/49.81	0.54	✓	8.94/8.92	0.02	✓
5	2	3/17/00 14:50	32.18	0.73	✓	5.74	0.48	✓
5	3	3/17/00 14:30	39.37	0.58	✓	6.46	1.19	✓
5	4	3/17/00 14:10	36.95	1.26	✓	5.71	1.76	✓
5	5	3/17/00 13:50	24.47	0.74	✓	3.77	0.02	✓
6	1	3/17/00 18:50	34.69	7.94	✓	9.17	6.39	✓
6	2	3/17/00 19:00	39.48	1.44	✓	8.21	1.83	✓
6	3	3/17/00 19:15	41.75	1.16	✓	5.50	0.96	✓
6	4	3/17/00 19:30	29.70	0.68	✓	5.24	0.73	✓
6	5	3/17/00 19:40	24.32	0.96	✓	1.94	2.74	✓

Duplicate: ✓

TABLE 2

2 of 2

## Summary Data for Suspended Solids

Event 1: 3/16/2000 18:05 - 3/18/2000 14:15

Cycle	Station	Time Collected	Suspended Solids				
			Ave. TSS mg/L	TSS Sta. Dev.	Duplicate	Ave. VSS mg/L	VSS Sta. Dev.
7	1	3/17/00 23:20	41.93	2.62	✓	5.42	0.28
7	2	3/17/00 23:05	45.47	5.42	✓	5.95	
7	3	3/17/00 22:20	47.31	N/A	N/A	N/A	N/A
7	4	3/17/00 22:35	39.64	N/A	N/A	N/A	N/A
7	5	3/17/00 22:50	26.88	1.52	✓	9.14	6.84
8	1	3/18/00 3:35	43.15	16.76	✓	6.12	3.36
8	2	3/18/00 3:55	41.43	0.85	✓	6.67	1.11
8	3	3/18/00 2:35	54.23/52.36	1.32	✓	7.69/8.36	0.47
8	4	3/18/00 2:20	39.22	0.80	✓	8.10	N/A
8	5	3/18/00 2:51	30.26	2.67	✓	5.65	2.11
9	1	3/18/00 7:40	25.00	1.41	✓	3.25	0.35
9	2	3/18/00 7:20	36.15	6.58	✓	N/A	N/A
9	3	3/18/00 8:00	26.00	0.00	✓	5.00	0.00
9	4	3/18/00 7:00	36.91	1.80	✓	4.91	1.29
9	5	3/18/00 6:45	17.14	0.39	✓	1.85	N/A
10	1	3/18/00 11:30	29.00	4.24	✓	2.75	1.77
10	2	3/18/00 11:13	49.25	0.35	✓	8.75	1.06
10	3	3/18/00 10:57	36.50	2.83	✓	5.75	1.06
10	4	3/18/00 10:36	23.00	1.41	✓	5.00	2.83
10	5	3/18/00 10:30	12.00/12.50	0.35	✓	4.50/2.50	0.71
11	1	3/18/00 15:10	21.25	1.77	✓	3.00	1.41
11	2	3/18/00 14:55	56.50	1.41	✓	9.75	1.06
11	3	3/18/00 14:40	31.00	0.71	✓	5.75	1.06
11	4	3/18/00 14:30	22.00	0.00	✓	4.00	0.00
11	5	3/18/00 14:15	15.50	0.00	✓	3.00	0.71

Duplicate: ✓

**TABLE 3****Summary Data for Nutrients****Event 1: 3/16/2000 18:05 - 3/18/2000 14:15**

Cycle	Station	Time Collected	Nutrients			
			NH <sub>4</sub> <sup>+</sup> mg/L	TON mg/L	o-PO <sub>4</sub> <sup>-</sup> mg/L	T-PO <sub>4</sub> mg/L
1	1	3/16/00 18:05	0.000	0.127	0.032	0.042
1	2	3/16/00 18:25	0.032	0.083	0.032	0.045
1	3	3/16/00 18:41	0.141/0.049	0.089/0.180	0.035/0.037	0.037/0.137
1	4	3/16/00 17:20	0.097	0.165	0.032	0.042
1	5	3/16/00 16:40	0.012	0.166	0.025	0.042
2	1	3/16/00 23:50	0.043	0.952	0.007	0.035
2	2	3/17/00 0:14	0.211	0.893	0.006	0.043
2	3	3/17/00 0:32	0.400	0.937	0.010	0.071
2	4	3/16/00 23:23	0.527	0.970	0.007	0.047
2	5	3/16/00 23:08	0.458	0.995	0.007	0.048
3	1	3/17/00 5:05	0.540	0.964	0.006	0.059
3	2	3/17/00 4:50	0.540	0.949	0.008	0.060
3	3	3/17/00 4:30	0.114/0.116	0.913/0.901	0.004/0.004	0.068/0.048
3	4	3/17/00 3:54	0.517	0.939	0.006	0.034
3	5	3/17/00 3:36	0.407	1.044	0.008	NA
4	1	3/17/00 8:56	0.347	0.919	0.005	0.038
4	2	3/17/00 9:17	0.134	0.866	0.004	0.038
4	3	3/17/00 9:35	0.123	0.876	0.008	0.044
4	4	3/17/00 8:24	0.498	0.969	0.006	0.043
4	5	3/17/00 8:03	0.373	1.053	0.009	0.048
5	1	3/17/00 15:08	0.142	0.973	0.005	0.071
5	2	3/17/00 14:50	0.138	0.859	0.004	0.033
5	3	3/17/00 14:30	0.294/0.293	0.854/0.888	0.004/0.007	0.042/0.171
5	4	3/17/00 14:10	0.493	0.936	0.006	0.034
5	5	3/17/00 13:50	0.476	0.967	0.007	0.047
6	1	3/17/00 18:50	0.441	1.001	0.009	0.051
6	2	3/17/00 19:00	0.523	0.956	0.009	0.044
6	3	3/17/00 19:15	0.385	0.898	0.014	0.072
6	4	3/17/00 19:30	0.171	0.890	0.005	0.049
6	5	3/17/00 19:40	0.104	0.863	0.010	0.079

NA: Data not available

TABLE 3

## Summary Data for Nutrients

Event 1: 3/16/2000 18:05 - 3/18/2000 14:15

Cycle	Station	Time Collected	Nutrients			
			NH <sub>4</sub> <sup>+</sup> mg/L	TON mg/L	o-PO <sub>4</sub> mg/L	T-PO <sub>4</sub> mg/L
7	1	3/17/00 23:20	0.102	0.914	0.004	0.032
7	2	3/17/00 23:05	0.083	0.843	0.004	0.040
7	3	3/17/00 22:20	0.243	0.893/0.888	0.003/0.005	0.059/0.051
7	4	3/17/00 22:35	0.415	0.899	0.004	0.039
7	5	3/17/00 22:50	0.501	0.982	0.007	0.044
8	1	3/18/00 3:35	0.116	0.896	0.005	0.032
8	2	3/18/00 3:55	0.107	0.850	0.004	0.040
8	3	3/18/00 2:35	0.513	0.965	0.004	0.033
8	4	3/18/00 2:20	0.460	0.929	0.006	0.042
8	5	3/18/00 2:51	0.506	0.871	0.005	0.038
9	1	3/18/00 7:40	0.138	0.886	0.005	0.057
9	2	3/18/00 7:20	0.475	0.875	0.004	0.062
9	3	3/18/00 8:00	0.454/0.433	0.907/0.880	0.006/0.006	0.045
9	4	3/18/00 7:00	0.537	0.960	0.007	0.042
9	5	3/18/00 6:45	0.269	1.120	0.012	0.035
10	1	3/18/00 11:30	0.137	0.909	0.004	0.060
10	2	3/18/00 11:13	0.419	0.855	0.004	0.060
10	3	3/18/00 10:57	0.538	0.877	0.004	0.051
10	4	3/18/00 10:36	0.550	0.951	0.006	0.050
10	5	3/18/00 10:30	0.496	0.960	0.008	0.034
11	1	3/18/00 15:10	0.268	0.891	0.004	0.034
11	2	3/18/00 14:55	0.558	0.846	0.004	0.084
11	3	3/18/00 14:40	0.596/0.567	0.866/0.874	0.004/0.004	0.059/0.034
11	4	3/18/00 14:30	0.563	0.903	0.005	0.050
11	5	3/18/00 14:15	0.593	0.969	0.008	0.054

NA: Data not available

**TABLE 4**

1 of 2

## Summary Data for Dissolved Organic Carbon

Cycle	Station	Time Collected	Duplicate	Dissolved Organic Carbon	
				mgC/L	SD
1	1	3/16/00 18:05	✓	4.14/4.41	0.19
1	2	3/16/00 18:25	✓	4.13	0.02
1	3	3/16/00 18:25	✓	3.89	0.15
1	4	3/16/00 17:20	✓	5.01	0.08
1	5	3/16/00 16:30	✓	4.79	0.38
2	1	3/16/00 23:50	✓	3.12	0.10
2	2	3/17/00 0:14		4.51	
2	3	3/17/00 0:23		NA	
2	4	3/16/00 23:23		5.30	
2	5	3/16/00 23:08		5.17	
3	1	3/17/00 5:05	✓	3.91	0.02
3	2	3/17/00 4:50	✓	4.52	0.31
3	3	3/17/00 4:30		4.22	
3	4	3/17/00 3:54	✓	4.37	0.33
3	5	3/17/00 3:36		4.42	
4	1	3/17/00 8:56	✓	6.01/5.84	0.12
4	2	3/17/00 9:17	✓	4.30	0.02
4	3	3/17/00 9:35	✓	4.43	0.10
4	4	3/17/00 8:24	✓	3.79	0.08
4	5	3/17/00 8:03	✓	3.42	0.28
5	1	3/17/00 15:08	✓	5.38	0.03
5	2	3/17/00 14:50	✓	5.89	0.06
5	3	3/17/00 14:30	✓	4.10	0.22
5	4	3/17/00 14:10	✓	4.19	0.01
5	5	3/17/00 13:50	✓	3.64	0.10
6	1	3/17/00 18:50		NA	
6	2	3/17/00 19:00		NA	
6	3	3/17/00 19:15	✓	4.45	0.11
6	4	3/17/00 19:30	✓	4.09	0.05
6	5	3/17/00 19:40	✓	3.44/3.43	0.01

✓ : Duplicate measured

NA: Data not available

**TABLE 4**

2 of 2

**Summary Data for Dissolved Organic Carbon****Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Duplicate	Dissolved Organic Carbon	
				mgC/L	SD
7	1	3/17/00 23:22	✓	4.78	0.24
7	2	3/17/00 23:05	✓	5.19	0.03
7	3	3/17/00 22:50	✓	4.58	0.11
7	4	3/17/00 22:35	✓	4.02	0.12
7	5	3/17/00 22:20	✓	3.85	0.30
8	1	3/18/00 3:55	✓	5.09	0.06
8	2	3/18/00 3:50	✓	5.11	0.06
8	3	3/18/00 2:45	✓	4.78	0.08
8	4	3/18/00 2:30	✓	3.80	0.14
8	5	3/18/00 2:08		3.42	
9	1	3/18/00 7:40	✓	5.13/5.37	0.17
9	2	3/18/00 7:20	✓	5.02	0.20
9	3	3/18/00 8:00	✓	4.30	0.15
9	4	3/18/00 7:00	✓	4.54	0.16
9	5	3/18/00 6:45	✓	3.63	0.02
10	1	3/18/00 11:30		6.16	
10	2	3/18/00 11:13	✓	6.27	0.14
10	3	3/18/00 10:57	✓	4.99	0.01
10	4	3/18/00 10:36	✓	3.92	0.00
10	5	3/18/00 10:30	✓	3.90	0.16
11	1	3/18/00 15:10		6.96	
11	2	3/18/00 14:50	✓	5.59/5.82	0.16
11	3	3/18/00 14:40		4.83	
11	4	3/18/00 14:30		4.71	
11	5	3/18/00 2:15	✓	4.24	0.16

✓ : Duplicate measured

NA: Data not available

TABLE 5

1 of 2

## Summary Data for Total Organic Carbon

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Total Organic Carbon mgC/L	SD
1	1	3/16/00 18:05	✓	4.90	0.12
1	2	3/16/00 18:25	✓	4.48	0.15
1	3	3/16/00 18:25	✓	3.69	0.28
1	4	3/16/00 17:20	✓	5.77/5.84	0.05
1	5	3/16/00 16:30	✓	4.89	0.27
2	1	3/16/00 23:50	✓	2.88	0.06
2	2	3/17/00 0:14	✓	5.26	0.16
2	3	3/17/00 0:23	✓	5.74	0.42
2	4	3/16/00 23:23		3.58	
2	5	3/16/00 23:08		3.63	
3	1	3/17/00 5:05	✓	4.66	0.07
3	2	3/17/00 4:50	✓	5.79	0.35
3	3	3/17/00 4:30	✓	4.71	0.15
3	4	3/17/00 3:54	✓	3.59	0.01
3	5	3/17/00 3:36	✓	3.81	0.56
4	1	3/17/00 8:56	✓	7.47/7.68	0.15
4	2	3/17/00 9:17	✓	5.49	0.32
4	3	3/17/00 9:35	✓	5.22	0.81
4	4	3/17/00 8:24	✓	4.55	0.27
4	5	3/17/00 8:03	✓	4.14	0.18
5	1	3/17/00 15:08	✓	6.79	0.13
5	2	3/17/00 14:50	✓	7.10	0.55
5	3	3/17/00 14:30	✓	5.79	0.34
5	4	3/17/00 14:10	✓	5.22	0.36
5	5	3/17/00 13:50	✓	4.23	0.21
6	1	3/17/00 18:50	✓	5.85	0.16
6	2	3/17/00 19:00	✓	5.54	
6	3	3/17/00 19:15	✓	5.23	0.12
6	4	3/17/00 19:30	✓	5.18	0.01
6	5	3/17/00 19:40	✓	4.13	0.30

✓ : Duplicate measured

NA: Data not available

TABLE 5

2 of 2

## Summary Data for Total Organic Carbon

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Dissolved Organic Carbon	
				mgC/L	SD
7	1	3/17/00 23:22	✓	5.33	0.14
7	2	3/17/00 23:05	✓	6.52	0.16
7	3	3/17/00 22:50	✓	5.84	0.08
7	4	3/17/00 22:35	✓	5.22/5.09	0.09
7	5	3/17/00 22:20	✓	4.36	0.15
8	1	3/18/00 3:55	✓	5.58	0.98
8	2	3/18/00 3:50	✓	6.29	0.22
8	3	3/18/00 2:45	✓	5.52	0.12
8	4	3/18/00 2:30	✓	4.37	0.08
8	5	3/18/00 2:08		3.47	
9	1	3/18/00 7:40	✓	5.15	0.02
9	2	3/18/00 7:20	✓	4.86	0.08
9	3	3/18/00 8:00	✓	4.51	0.16
9	4	3/18/00 7:00	✓	3.93	0.01
9	5	3/18/00 6:45	✓	3.29	0.21
10	1	3/18/00 11:30	✓	5.63	0.01
10	2	3/18/00 11:13	✓	8.63	0.70
10	3	3/18/00 10:57	✓	6.27	0.43
10	4	3/18/00 10:36	✓	4.12	0.04
10	5	3/18/00 10:30	✓	3.51/4.01	0.35
11	1	3/18/00 15:10	✓	6.68	0.88
11	2	3/18/00 14:50	✓	6.52	0.71
11	3	3/18/00 14:40	✓	6.91	1.33
11	4	3/18/00 14:30	✓	5.39	0.39
11	5	3/18/00 2:15	✓	4.73	

✓ : Duplicate measured

**TABLE 6**

1 of 2

**Summary Data for Particulate Organic Carbon****Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Duplicate	Particulate Organic Carbon	
				mgC/L	SD
1	1	3/16/00 18:05	✓	1.82	0.11
1	2	3/16/00 18:25	✓	1.20	0.07
1	3	3/16/00 18:25	✓	0.90	0.06
1	4	3/16/00 17:20	✓	2.16	0.13
1	5	3/16/00 16:30	✓	1.97	0.18
2	1	3/16/00 23:50	✓	0.76	0.08
2	2	3/17/00 0:14	✓	2.04/1.28	0.54
2	3	3/17/00 0:23	✓	1.95	0.50
2	4	3/16/00 23:23	✓	1.25	0.14
2	5	3/16/00 23:08	✓	0.94	0.04
3	1	3/17/00 5:05	✓	1.10	0.12
3	2	3/17/00 4:50	✓	2.89	0.85
3	3	3/17/00 4:30	✓	1.31	0.45
3	4	3/17/00 3:54	✓	0.84	0.04
3	5	3/17/00 3:36		0.87	
4	1	3/17/00 8:56	✓	2.05	0.22
4	2	3/17/00 9:17	✓	1.16	0.09
4	3	3/17/00 9:35	✓	1.02	0.06
4	4	3/17/00 8:24	✓	0.94	0.05
4	5	3/17/00 8:03	✓	0.91	0.24
5	1	3/17/00 15:08	✓	3.20	0.42
5	2	3/17/00 14:50	✓	2.43	0.24
5	3	3/17/00 14:30	✓	2.63	0.14
5	4	3/17/00 14:10	✓	2.03	0.71
5	5	3/17/00 13:50	✓	1.17/1.18	0.01
6	1	3/17/00 18:50	✓	2.03	0.14
6	2	3/17/00 19:00	✓	1.68	0.22
6	3	3/17/00 19:15	✓	2.08	0.09
6	4	3/17/00 19:30	✓	2.10	0.09
6	5	3/17/00 19:40	✓	1.53	0.19

✓ : Duplicate measured

**TABLE 6**

2 of 2

**Summary Data for Particulate Organic Carbon****Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Duplicate	Particulate Organic Carbon	
				mgC/L	SD
7	1	3/17/00 23:22	✓	1.54/1.44	0.07
7	2	3/17/00 23:05	✓	1.79	0.26
7	3	3/17/00 22:50		1.78	
7	4	3/17/00 22:35		1.95	
7	5	3/17/00 22:20	✓	1.09	0.08
8	1	3/18/00 3:55	✓	1.55	0.76
8	2	3/18/00 3:50	✓	1.84	0.06
8	3	3/18/00 2:45	✓	2.23	0.12
8	4	3/18/00 2:30	✓	1.67	0.08
8	5	3/18/00 2:08		1.18	
9	1	3/18/00 7:40	✓	1.95	0.29
9	2	3/18/00 7:20	✓	2.47	1.55
9	3	3/18/00 8:00	✓	2.24	0.39
9	4	3/18/00 7:00	✓	2.41	0.33
9	5	3/18/00 6:45	✓	1.18	0.50
10	1	3/18/00 11:30	✓	1.90	0.63
10	2	3/18/00 11:13	✓	3.61	0.22
10	3	3/18/00 10:57	✓	2.42	0.47
10	4	3/18/00 10:36	✓	2.33	0.69
10	5	3/18/00 10:30	✓	1.66/2.01	0.25
11	1	3/18/00 15:10	✓	2.03	0.37
11	2	3/18/00 14:50	✓	3.92	0.85
11	3	3/18/00 14:40	✓	2.58	0.58
11	4	3/18/00 14:30	✓	2.13	0.10
11	5	3/18/00 2:15	✓	1.78	0.24

✓ : Duplicate measured

**TABLE 7**

1 of 2

**Summary Data for Percent Organic Carbon****Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Duplicate	Percent Organic Carbon	
				%	SD
1	1	3/16/00 18:05	✓	5.2	0.2
1	2	3/16/00 18:25	✓	6.3	0.5
1	3	3/16/00 18:25	✓	7.0	0.9
1	4	3/16/00 17:20	✓	5.1	0.1
1	5	3/16/00 16:30	✓	6.1	0.4
2	1	3/16/00 23:50	✓	3.1	0.3
2	2	3/17/00 0:14	✓	4.8	0.5
2	3	3/17/00 0:23	✓	4.8	0.5
2	4	3/16/00 23:23	✓	3.6	0.3
2	5	3/16/00 23:08	✓	6.1	0.1
3	1	3/17/00 5:05	✓	3.6	0.7
3	2	3/17/00 4:50	✓	7.4	2.2
3	3	3/17/00 4:30	✓	5.4	1.7
3	4	3/17/00 3:54		5.3	
3	5	3/17/00 3:36	✓	4.9	0.6
4	1	3/17/00 8:56	✓	5.3	0.5
4	2	3/17/00 9:17	✓	3.3	0.4
4	3	3/17/00 9:35	✓	2.3	0.1
4	4	3/17/00 8:24	✓	2.7	0.1
4	5	3/17/00 8:03	✓	3.9	1.1
5	1	3/17/00 15:08	✓	6.4	0.8
5	2	3/17/00 14:50	✓	7.6	0.9
5	3	3/17/00 14:30	✓	6.7	0.4
5	4	3/17/00 14:10	✓	5.5	1.7
5	5	3/17/00 13:50	✓	4.8	0.1
6	1	3/17/00 18:50	✓	6.0	1.0
6	2	3/17/00 19:00	✓	4.2	0.4
6	3	3/17/00 19:15	✓	5.0	0.1
6	4	3/17/00 19:30	✓	7.1	0.1
6	5	3/17/00 19:40	✓	6.3	0.5

✓ : Duplicate measured

TABLE 7

1 of 2

## Summary Data for Percent Organic Carbon

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Percent Organic Carbon	
				%	SD
1	1	3/16/00 18:05	✓	5.2	0.2
1	2	3/16/00 18:25	✓	6.3	0.5
1	3	3/16/00 18:25	✓	7.0	0.9
1	4	3/16/00 17:20	✓	5.1	0.1
1	5	3/16/00 16:30	✓	6.1	0.4
2	1	3/16/00 23:50	✓	3.1	0.3
2	2	3/17/00 0:14	✓	4.8	0.5
2	3	3/17/00 0:23	✓	4.8	0.5
2	4	3/16/00 23:23	✓	3.6	0.3
2	5	3/16/00 23:08	✓	6.1	0.1
3	1	3/17/00 5:05	✓	3.6	0.7
3	2	3/17/00 4:50	✓	7.4	2.2
3	3	3/17/00 4:30	✓	5.4	1.7
3	4	3/17/00 3:54		5.3	
3	5	3/17/00 3:36	✓	4.9	0.6
4	1	3/17/00 8:56	✓	5.3	0.5
4	2	3/17/00 9:17	✓	3.3	0.4
4	3	3/17/00 9:35	✓	2.3	0.1
4	4	3/17/00 8:24	✓	2.7	0.1
4	5	3/17/00 8:03	✓	3.9	1.1
5	1	3/17/00 15:08	✓	6.4	0.8
5	2	3/17/00 14:50	✓	7.6	0.9
5	3	3/17/00 14:30	✓	6.7	0.4
5	4	3/17/00 14:10	✓	5.5	1.7
5	5	3/17/00 13:50	✓	4.8	0.1
6	1	3/17/00 18:50	✓	6.0	1.0
6	2	3/17/00 19:00	✓	4.2	0.4
6	3	3/17/00 19:15	✓	5.0	0.1
6	4	3/17/00 19:30	✓	7.1	0.1
6	5	3/17/00 19:40	✓	6.3	0.5

✓ : Duplicate measured

TABLE 8				
1 of 2				
Summary Data for Total Kjeldahl Nitrogen				
Event 1: 3/16/2000 16:30 - 3/18/2000 16:30				
Cycle	Station	Time Collected	Total Kjeldahl Nitrogen	
			TKN mg/L	Duplicate mg/L
1	1	3/16/00 18:05	0.59	
1	2	3/16/00 18:25	0.86	
1	3	3/16/00 18:41	0.82	0.86
1	4	3/16/00 17:20	0.76	
1	5	3/16/00 16:40	0.54	
2	1	3/16/00 23:50	0.32	
2	2	3/17/00 0:14	0.59	
2	3	3/17/00 0:32	0.92	
2	4	3/16/00 23:23	0.86	
2	5	3/16/00 23:08	0.8	
3	1	3/17/00 5:05	1.06	
3	2	3/17/00 4:50	0.5	
3	3	3/17/00 4:30	0.84	0.53
3	4	3/17/00 3:54	0.81	
3	5	3/17/00 3:36	0.93	
4	1	3/17/00 8:56	0.72	
4	2	3/17/00 9:17	0.65	
4	3	3/17/00 9:35	1.04	
4	4	3/17/00 8:24	0.73	
4	5	3/17/00 8:03	0.87	
5	1	3/17/00 15:08	0.66	
5	2	3/17/00 14:50	0.76	
5	3	3/17/00 14:30	0.84	0.81
5	4	3/17/00 14:10	0.94	
5	5	3/17/00 13:50	0.88	
6	1	3/17/00 18:50	0.67	
6	2	3/17/00 19:00	0.77	
6	3	3/17/00 19:15	0.88	
6	4	3/17/00 19:30	0.98	
6	5	3/17/00 19:40	0.86	

**TABLE 8**  
**2 of 2**  
**Summary Data for Total Kjeldahl Nitrogen**

**Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Total Kjeldahl Nitrogen	
			TKN mg/L	Duplicate mg/L
7	1	3/17/00 23:20	0.38	
7	2	3/17/00 23:05	0.72	
7	3	3/17/00 22:50	0.81	0.80
7	4	3/17/00 22:35	1.01	
7	5	3/17/00 22:20	0.92	
8	1	3/18/00 3:35	0.39	
8	2	3/18/00 3:55	0.48	
8	3	3/18/00 2:51	0.94	
8	4	3/18/00 2:35	0.78	
8	5	3/18/00 2:20	0.76	
9	1	3/18/00 7:40	0.48	
9	2	3/18/00 7:20	1.18	
9	3	3/18/00 8:00	NA	
9	4	3/18/00 7:00	0.68	1.07
9	5	3/18/00 6:45	0.44	
10	1	3/18/00 11:30	0.57	
10	2	3/18/00 11:13	0.96	
10	3	3/18/00 10:57	0.99	
10	4	3/18/00 10:36	0.87	
10	5	3/18/00 14:15	0.71	
11	1	3/18/00 15:10	0.53	
11	2	3/18/00 14:55	0.53	
11	3	3/18/00 14:40	0.92	0.77
11	4	3/18/00 14:30	0.86	
11	5	3/18/00 14:15	0.87	

**Table 9**

1 of 2

**Summary Data for Water Quality****Event 1: 3/16/2000 16:30 - 3/18/2000 16:30**

Cycle	Station	Time Collected	Duplicate	Hydrolab Data			
				Temp °C	pH Units	SpCond µS/cm	DO mg/l
1	1	3/16/00 18:05		12.21	6.97	399.2	8.2
1	2	3/16/00 18:25		12.29	6.98	404.2	6.43
1	3	3/16/00 18:41		12.39	7.13	410.4	6.05
1	4	3/16/00 17:20		12.31	7.08	401.8	6.79
1	5	3/16/00 16:40		11.78	7.01	341.1	8.23
2	1	3/16/00 23:50		12.51	6.97	408.8	6.05
2	2	3/17/00 0:14		12.57	7.04	400.7	7.95
2	3	3/17/00 0:32		12.43	7.06	401.5	7.39
2	4	3/16/00 23:23		12.48	6.95	409.0	5.95
2	5	3/16/00 23:08		12.31	6.99	401.7	6.63
3	1	3/17/00 4:30		12.51	6.97	408.8	6.05
3	1	3/17/00 4:30	✓	12.51	7.08	408.3	5.66
3	2	3/17/00 4:50		12.56	6.92	404.0	6.24
3	3	3/17/00 5:05		13.35	7.10	380.2	8.12
3	4	3/17/00 3:54		12.38	7.01	408.1	5.95
3	5	3/17/00 3:36		13.37	7.17	378.0	8.36
4	1	3/17/00 8:56		EQUIPMENT FAILURE			
4	2	3/17/00 9:17		EQUIPMENT FAILURE			
4	3	3/17/00 9:35		EQUIPMENT FAILURE			
4	4	3/17/00 8:24		12.32	7.07	408.9	5.73
4	5	3/17/00 8:03		12.05	7.28	382.8	6.62
5	1	3/17/00 15:08		12.56	6.92	N/A	8.27
5	2	3/17/00 14:50		12.49	7.07	N/A	7.42
5	3	3/17/00 14:30		12.9	7.00	N/A	7.58
5	4	3/17/00 14:10		13.33	6.92	N/A	6.84
5	5	3/17/00 13:50		12.41	7.56	N/A	7.56
6	1	3/17/00 18:50		12.58	7.07	N/A	8.63
6	2	3/17/00 19:00		12.97	7.05	N/A	8.45
6	3	3/17/00 19:15		12.28	7.08	N/A	8.29
6	4	3/17/00 19:30		12.14	7.05	N/A	7.84
6	5	3/17/00 19:40		11.79	7.2	N/A	7.8

✓ : Duplicate sample taken.

NA: Not Available

Table 9

2 of 2

## Summary Data for Water Quality

Event 1: 3/16/2000 16:30 - 3/18/2000 16:30

Cycle	Station	Time Collected	Duplicate	Hydrolab® Data			
				Temp °C	pH Units	SpCond mS/cm	DO mg/l
7	1	3/17/00 23:20		10.99	7.32	N/A	10.55
7	2	3/17/00 23:05		12.23	7.14	N/A	8.48
7	3	3/17/00 22:50		12.04	7.13	N/A	7.97
7	4	3/17/00 22:35		11.85	7.11	N/A	7.88
7	5	3/17/00 22:20		11.98	7.13	N/A	8.19
8	1	3/18/00 3:35		10.57	7.2	N/A	9.18
8	2	3/18/00 3:55		11.53	7.13	N/A	6.86
8	3	3/18/00 2:51		11.26	7.07	N/A	7.2
8	4	3/18/00 2:35		11.47	7.09	N/A	8.25
8	5	3/18/00 2:20		11.75	7.18	N/A	7.67
9	1	3/18/00 7:40		NO DATA			
9	2	3/18/00 7:20		NO DATA			
9	3	3/18/00 8:00		NO DATA			
9	4	3/18/00 7:00		NO DATA			
9	5	3/18/00 6:45		NO DATA			
10	1	3/18/00 11:30		8.25	6.93	N/A	9.45
10	2	3/18/00 11:13		10.91	6.86	N/A	7.22
10	3	3/18/00 10:57		10.58	6.9	N/A	7.43
10	4	3/18/00 10:36		11.32	6.97	N/A	8.2
10	5	3/18/00 10:30		11.33	7.07	N/A	7.46
11	1	3/18/00 15:10		9.04	6.95	N/A	9.28
11	2	3/18/00 14:55		11.38	6.86	N/A	7.07
11	3	3/18/00 14:40		11.52	6.9	N/A	6.8
11	4	3/18/00 14:30		11.58	6.97	N/A	6.87
11	5	3/18/00 14:15		11.63	7.07	N/A	7.39

✓ : Duplicate sample taken.

---

## **APPENDIX 1**

**Technician Log**

**Field Conditions Sheet**

**Lab Conditions Sheet**

## "WET WEATHER EVENT"

3/14 — 3/18

## Technician Log

\*Sign in and out of every shift\*

## Field Lab Conditions

\*Record field lab conditions after each sampling session\*

Date	Time	Temp (°F)	Humidity	Technician	Comments
3/11/14	5:55	63	69%	JB	Door open
3/11/14	19:30	61	72	JB	Door open
3/11/14	5:20	62	72	JB	Door closed
3/17/14	18:05	59	35%	RHM	Door open (collish)
3/17/14	20:00	59	38%	CM	Door closed
3/17/14	22:00	61	38	CM	Door closed
3/18	1:00	61	34		Door closed
3/18	1:50	63	30		Door closed

## Field Conditions

\*Record Field Conditions before each sampling session\*

Date	Time	Temp (°C)	Humidity	Technician	Description of Weather (if rain -- drizzle, sprinkle, shower, hard rain, storm)
3/11/08	5:15	54	69	JP	cloudy
3/11/08	11:04	61	72	JP	drizzle, hard rain, short period
3/11/08	16:12	66	37	JP	no rain, yet
3/11/08	16:15	56	77	JP	rain begins & stops
3/11/08	16:20	66	77	JP	clear
3/11/08	17:15	57	82	JP	overcast
3/11/08	20:00	54	34	JP	clear
3/12/08	22:00	34	33	JP	clear
3/13/08	10:00	38	26	JP	clear
3/13/08	14:00	42	26	JP	clear

## **APPENDIX 2**

**PE Evaluations**

**QA/QC Data from CAL**



Analytical Products Group, Inc.

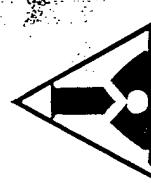
# PERFORMANCE REPORT

## WVP Performance Summary

May 2000

APG Customer Code: 11045

Geo-Centers Inc  
c/o NRL Building 207 RM 202  
4555 Overlook Ave. SW  
Washington, DC 20375



Laboratory of  
EXCELLENCE

APG Customer 11045 Geo-Centers Inc  
EPA Lab Code N/A 4555 Overlook Ave. SW  
Washington, DC 20375

Print Date June 25, 2000

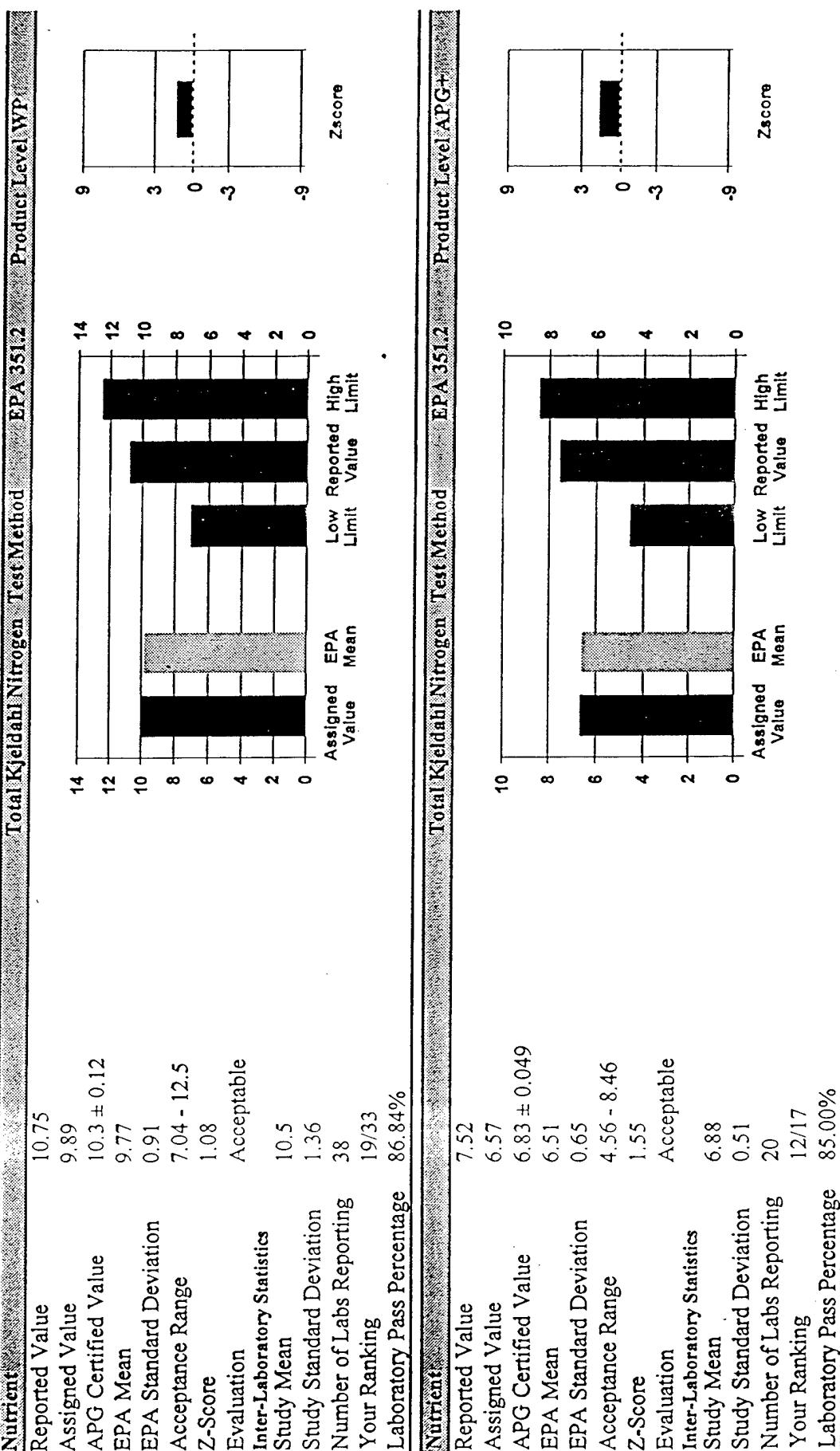
Page 6  
WP May 2000  
Study Closing Date 06/15/2000

Product: Nutrient

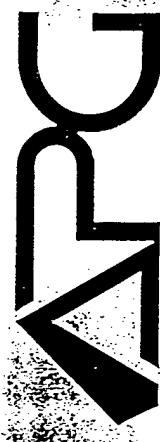
Analyte	Product Level	Analyte Code	Reported Value	Assigned Value	Acceptance Range	Z-Score	Test Method Evaluation
Ammonia Nitrogen as N	WP	31	2.14		1.59-2.7		
Ammonia Nitrogen as N	APG+	31	6.95		5.36-8.49		
Nitrate Nitrogen as N	WP	32	11.1		8.77-13.2		
Nitrate Nitrogen as N	APG+	32	8.31		6.56-9.89		
Orthophosphate as P	WP	33	3.42		2.92-3.96		
Orthophosphate as P	APG+	33	4.68		3.99-5.4		
Total Kjeldahl Nitrogen	WP	34	10.75	9.89	7.04-12.5	1.08	EPA 351.2 Acceptable
Total Kjeldahl Nitrogen	APG+	34	7.52	6.57	4.56-8.46	1.55	EPA 351.2 Acceptable
Total Phosphorus as P	WP	35	3.44		2.61-4.04		
Total Phosphorus as P	APG+	35	5.84		4.44-6.83		



APG Customer	11045	Geo-Centers Inc
EPA Lab Code	N/A	4555 Overlook Ave. SW Washington, DC 20375
<b>Nutrient</b>		
Reported Value	10.75	
Assigned Value	9.89	
APG Certified Value	10.3 ± 0.12	
EPA Mean	9.77	
EPA Standard Deviation	0.91	
Acceptance Range	7.04 - 12.5	
Z-Score	1.08	
Evaluation	Acceptable	
Inter-Laboratory Statistics		
Study Mean	10.5	
Study Standard Deviation	1.36	
Number of Labs Reporting	38	
Your Ranking	19/33	
Laboratory Pass Percentage	86.84%	



APG



Analytical Products Group, Inc.

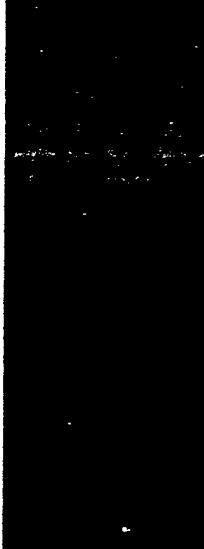
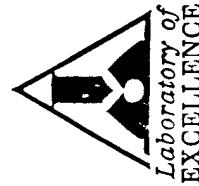
# PERFORMANCE REPORT

WP Performance Summary

August 2000

APG Customer Code: 11045

Geo-Centers Inc  
c/o NRL Building 207 RM 202  
4555 Overlook Ave. SW  
Washington, DC 20375



APG Customer 11045 Geo-Centers Inc  
EPA Lab Code N/A 4555 Overlook Ave. SW  
Washington, DC 20375

Print Date September 26, 2000 Page 6  
WP August 2000  
Performance Summary Study Closing Date 09/15/2000

Product: Nutrient	Lot Number: 28516-28517			
Analyte	Product Level	Analyte Code	Assigned Value	Acceptance Range
Ammonia Nitrogen as N	WP	31	8.21	8.12
Ammonia Nitrogen as N	APG+	31	6.00	6.02
Nitrate Nitrogen as N	WP	32	7.65	6.93
Nitrate Nitrogen as N	APG+	32	2.09	1.94
Orthophosphate as P	WP	33	5.36	5.1
Orthophosphate as P	APG+	33	4.10	3.87
Total Kjeldahl Nitrogen	WP	34	8.88	6.29-11.3
Total Kjeldahl Nitrogen	APG+	34	4.09	2.71-5.47
Total Phosphorus as P	WP	35	7.16	5.6
Total Phosphorus as P	APG+	35	5.03	3.76

Z-Score

Test Method

EPA 350.1

EPA 350.1

EPA 353.2

EPA 353.2

EPA 365.1

EPA 365.1

EPA 365.1

EPA 365.1

EPA 365.1

Evaluation

Acceptable

Acceptable

Acceptable

Acceptable

Acceptable

Acceptable

Not Acceptable

Not Acceptable



Analytical Products Group, Inc.  
2700 Washington Boulevard • Rahway, NJ 07065 • Fax 732-447-1100

APG Customer 11045  
EPA Lab Code N/A  
Geo-Centers Inc  
4555 Overlook Ave. SW  
Washington, DC 20375

Print Date September 26, 2000  
Page 7  
WP August 2000  
Performance Summary  
Study Closing Date 09/15/2000

**Product: Nutrient**

**Exception Reporting**

Analytic	Product Level	Analyte Code	Reported Value	Assigned Value	Acceptance Range	Z-Score	Test Method	Evaluation
Total Phosphorus as P	WP	35	7.16	5.6	4.26-6.56	4.61	EPA 365.1	Not Acceptable
Total Phosphorus as P	APG+	35	5.03	3.76	2.86-4.42	5.35	EPA 365.1	Not Acceptable

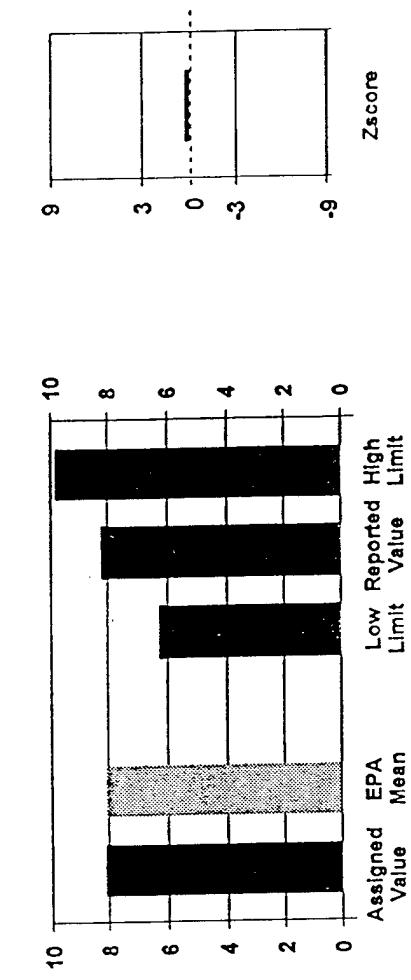


APG Customer 11045 Geo-Centers Inc  
EPA Lab Code N/A 4555 Overlook Ave. SW  
Washington, DC 20375

Print Date September 26, 2000 Page 8  
WP August 2000  
Study Closing Date 09/15/2000

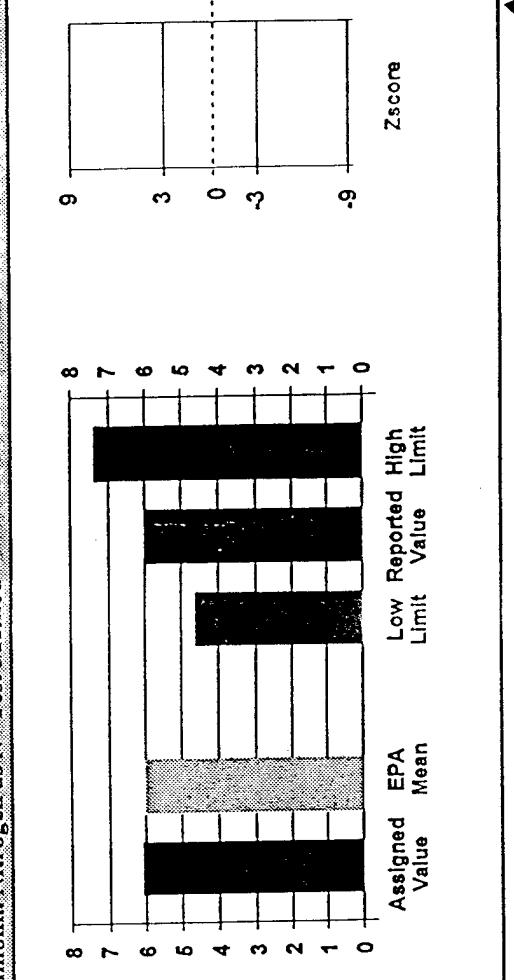
**Nutrient** Ammonia Nitrogen as N Test Method EPA 350.1 Product Level WP

Reported Value	8.21
Assigned Value	8.12
APG Certified Value	8 ± 0.023
EPA Mean	8.08
EPA Standard Deviation	0.6
Acceptance Range	6.27 - 9.89
Z-Score	0.22
Evaluation	Acceptable
Inter-Laboratory Statistics	
Study Mean	8.18
Study Standard Deviation	0.54
Number of Labs Reporting	36
Your Ranking	5/28
Laboratory Pass Percentage	97.22%



**Nutrient** Ammonia Nitrogen as N Test Method EPA 350.1 Product Level APG+

Reported Value	6.00
Assigned Value	6.02
APG Certified Value	6.01 ± 0.05
EPA Mean	5.99
EPA Standard Deviation	0.46
Acceptance Range	4.62 - 7.36
Z-Score	0.013
Evaluation	Acceptable
Inter-Laboratory Statistics	
Study Mean	6.22
Study Standard Deviation	0.41
Number of Labs Reporting	25
Your Ranking	2/25
Laboratory Pass Percentage	96.00%



APG

APG Customer 11045 Geo-Centers Inc  
EPA Lab Code N/A 4555 Overlook Ave. SW  
Washington, DC 20375

Print Date September 26, 2000 Page 9  
WP August 2000  
Study Closing Date 09/15/2000

**Nutrient** Nitrate Nitrogen as N Test Method EPA 353.2 Product Level WP

Reported Value	7.65	Assigned Value	6.93	APG Certified Value	7.04 ± 0.01	EPA Mean	6.86	EPA Standard Deviation	0.47	Acceptance Range	5.46 - 8.25	Z-Score	1.68	Evaluation	Acceptable
Inter-Laboratory Statistics															
Study Mean	7.07														
Study Standard Deviation	0.55														
Number of Labs Reporting	22														
Your Ranking	17/21														
Laboratory Pass Percentage	90.91%														

**Nutrient** Nitrate Nitrogen as N Test Method EPA 353.2 Product Level APG+ WP

Reported Value	2.09	Assigned Value	1.94	APG Certified Value	1.94 ± 0.027	EPA Mean	1.92	EPA Standard Deviation	0.14	Acceptance Range	1.5 - 2.34	Z-Score	1.2	Evaluation	Acceptable
Inter-Laboratory Statistics															
Study Mean	2.0														
Study Standard Deviation	1.6														
Number of Labs Reporting	1.0														
Your Ranking	0.5														
Laboratory Pass Percentage	0.0														

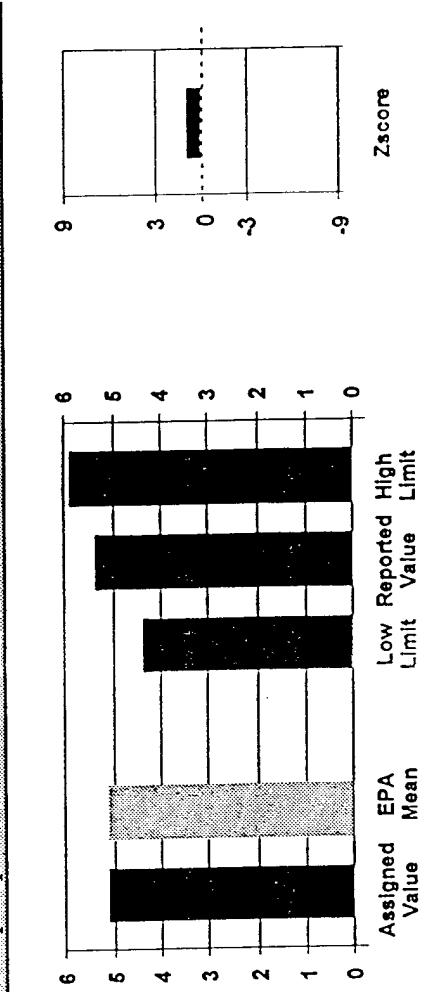
APG

Print Date September 26, 2000  
Page 10  
WP August 2000  
Study Closing Date 09/15/2000

APG Customer 11045  
EPA Lab Code N/A  
Geo-Centers Inc  
4555 Overlook Ave. SW  
Washington, DC 20375

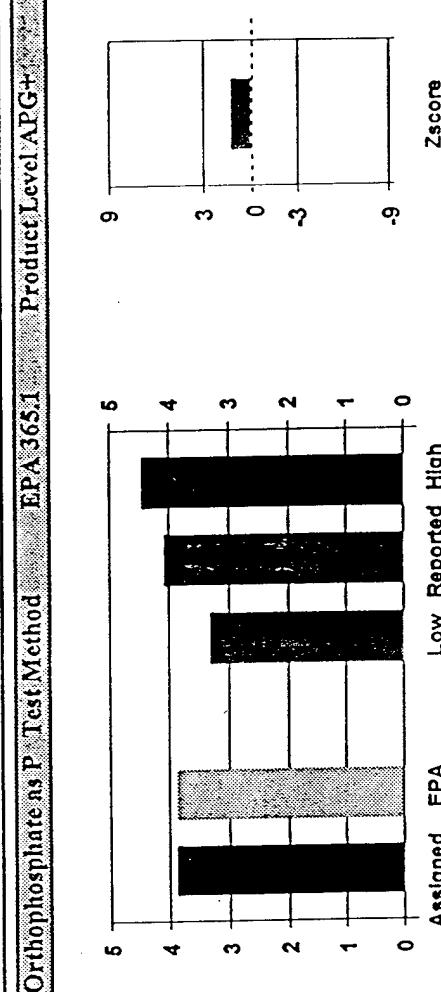
**Nutrient** Orthophosphate as P Test Method EPA 3651 Product Level WP

Reported Value	5.36
Assigned Value	5.1
APG Certified Value	$5.05 \pm 0.034$
EPA Mean	5.12
EPA Standard Deviation	0.26
Acceptance Range	4.36 - 5.89
Z-Score	0.92
Evaluation	Acceptable
Inter-Laboratory Statistics	
Study Mean	5.21
Study Standard Deviation	0.18
Number of Labs Reporting	20
Your Ranking	11/14
Laboratory Pass Percentage	100.00%



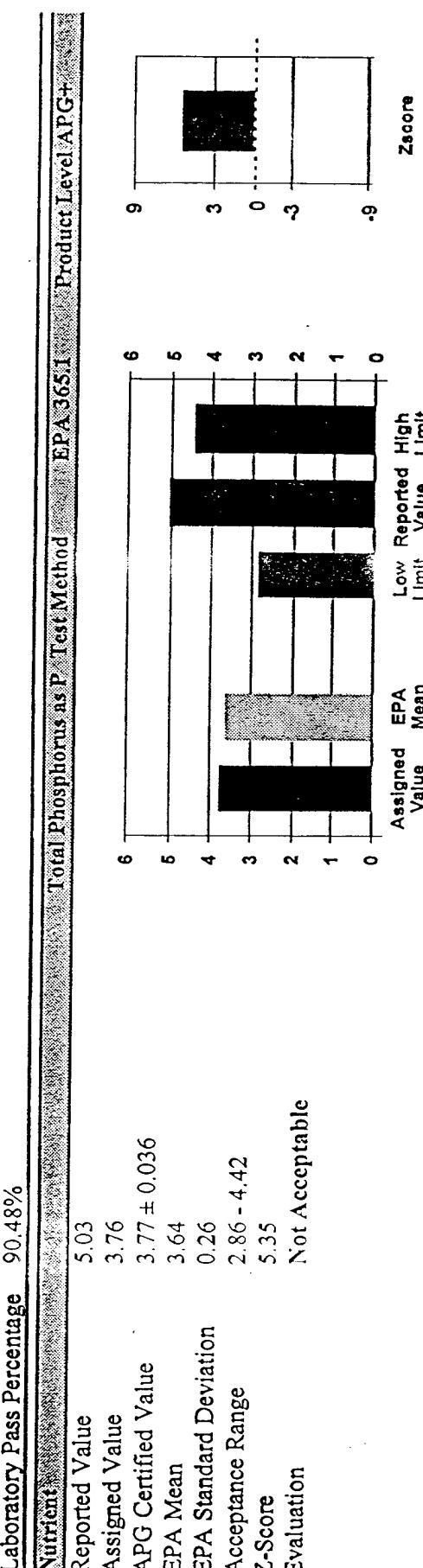
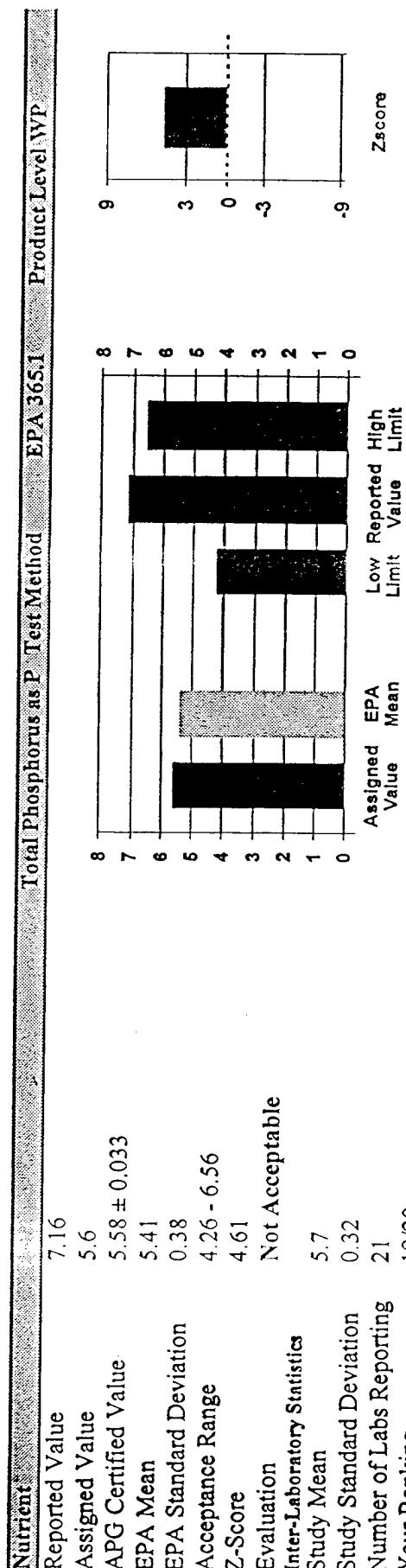
**Nutrient** Orthophosphate as P Test Method EPA 3651 Product Level APG+

Reported Value	4.10
Assigned Value	3.87
APG Certified Value	$3.87 \pm 0.032$
EPA Mean	3.89
EPA Standard Deviation	0.2
Acceptance Range	3.3 - 4.47
Z-Score	1.09
Evaluation	Acceptable



APG Customer  
EPA Lab Code  
11045  
N/A  
Geo-Centers Inc  
4555 Overlook Ave. SW  
Washington, DC 20375

Print Date September 26, 2000 Page 12  
WY August 2000  
Study Closing Date 09/15/2000



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**Spike QA/QC Results from previous sample group (Event 3)**

Sample ID	result	Spike mg/l	spike result	% recovery
153	0.78	1.0	1.88	110
218	1.00	1.0	2.02	100
362	1.23	1.0	2.19	96
16	0.86	2.0	2.36	75
112	2.23	1.0	2.23	97
3117	1.13	1.0	2.04	91
306	0.73	1.0	1.74	100
307	1.23	1.0	1.87	65
405	0.99	2.0	3.24	112
421	2.65	1.0	2.91	26
439	0.72	1.0	1.61	89
424	0.97	2.0	2.72	87.5
482	0.77	2.0	2.80	101

**Secondary Source QA sample**

DATE	QA True Value	RESULTS	% Recovery
------	------------------	---------	------------

9-20-00	8.90	8.01	89
9-14-00	8.90	9.45	105
9-18-00	8.90	9.27	104
6-16-00	9.3	9.78	105
6-10-00	8.9	9.1	102
6-13-00	9.3	10.4	111
9-25	8.9	7.99	89

### Event 1 Blank Table

	Event 1				
	Field 1	Field 2	Field 3	Field 4	Equip
TSS (mg/L)	0.0009	NA	NA	NA	0.0012
VSS (mg/L)	NA	NA	NA	NA	0
TOC (mg/L)	0.09	NA	NA	NA	0.38
DOC (mg/L)	0.41	NA	NA	NA	0.2
TKN (mg/L)	0	0.02	NA	NA	0.02
NH4 (mg/L)	0.004	0.005	0.004	0.005	0
TON (mg/L)	0.003	NA	NA	0.005	0.005
o-PO4 (mg/L)	0.047	0.029	0.03	NA	0.029
T-PO4 (mg/L)	0.047	0.029	0.029	0.029	0.029

## **APPENDIX 3**

**Chain of Custody Forms (NRL)**

**Chain of Custody Forms (CAL)**

## **APPENDIX 4**

**Laboratory Data Sheets (NRL)**

**Raw Data Sheets (CAL)**

Environmental Quality Sciences  
U.S. Naval Research Laboratory  
Code 6115, 4555, Overlook Ave SW  
Washington D.C. 20375  
202-404-6416 Fax: 202-404-8515

# Chain of Custody

Date 3/17 Page 1 of 1

Project Manager:	John Dohman
Organization:	US NRL, Code 6115
Address:	

Ship To:	
Organization:	
Address:	
Sampler (Signature):	
Phone Number:	202-404-7756

LABORATORY ANALYSIS	
Feecal coliforms	200ml in Na <sub>2</sub> SO <sub>4</sub>
Nutrients	
Orthophosphate	
Dissolved Organic Carbon	
Particulate Organic Carbon	
TKN	
Total phosphorus	
Total suspended soils	
Volatile suspended soils	
CBODs	
FIELD CONDITIONS	
PH	
Conductivity	
Dissolved Oxygen mg/L	
Turbidity	
Temperature °C	
RECEIPT CONDITIONS	
Number of Containers	30
Temperature °C	44
Time:	10:45 AM

Project Information	
Sample Receipt	
Project Number:	214
Project Name:	Chlorophyll a
Job Order Number:	NA
Via:	Sealant
TAT:	<input type="checkbox"/> 24h <input type="checkbox"/> 48h <input type="checkbox"/> 72h <input type="checkbox"/> 1wk <input type="checkbox"/> 2wk
Comments:	<input type="checkbox"/> Disposal <input type="checkbox"/> Return <input type="checkbox"/> Pickup
Distribution	
White: Recipient	Canary: Project Manager
Print: Project file	
Time:	10:45 AM
Signature:	
Printed Name:	John Dohman
Date:	3/17/15
Company:	US NRL
Time:	10:45 AM
Signature:	
Printed Name:	John Dohman
Date:	3/17/15
Company:	US NRL
Time:	10:45 AM
Signature:	
Printed Name:	John Dohman
Date:	3/17/15
Company:	US NRL

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202-404-6416 Fax: 202-404-8515

# Chain of Custody

Project Manager: John Polk/mr  
Organization: U.S. NRC Cycle 6/00  
Address:

Ship To:  
Organization:  
Address:  
  
 John Polk 08/03  
Sampler (Signature)

Phone Number

Sample ID	Sample Date	Time	Matrix	Lab ID
SS Cycle 7-7	3/17/03	filter		
K Cycle 7-7		H2O		
N Cycle 7-7		H2O		
P Cycle 7-7		H2O		
OC Cycle 7-8		H2O		
PC Cycle 7-7		filter		
TC Cycle 7-7		H2O		

## Recommended Quantity and Preservative (Provide triple volume for QC samples)

Parameter	Value	Notes
LABORATORY ANALYSIS	200ml in Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	
Nutrients		
Orthophosphate		
Dissolved Organic Carbon		
Particulate Organic Carbon		
TKN		
Total phosphorus		
Total suspended soils		
Volatile suspended soils		
CBODs		
FIELD CONDITIONS		
Conductivity	0C	
Dissolved Oxygen	mg/L	
Temperature	0C	
pH		
RECEIPT CONDITIONS		
Turbidity	0C	
Temperature	0C	
Number of Containers	C	

Project Information		Sample Received		Distribution	
Total Number of Samples	10	Received by	John Polk	Recipient	White: Recipient
Chain of Custody	SS, K, N, P, OC, PC, TC	Signature		Signature	Canary: Project Manager
Seal/Stamp	None	Date:	3/18/03	Date:	3/18/03
Via:	None	Company:	None	Company:	None
TAT:	<input type="checkbox"/> 24h <input type="checkbox"/> 48h <input type="checkbox"/> 72h <input type="checkbox"/> 1wk <input type="checkbox"/> 2wk	Return	<input type="checkbox"/>	Pickup	<input type="checkbox"/>
Comments:	Delivered to NRC 11:15 3/18/03				

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## Chain of Custody

Date 7/18/00 Page 1 of 1

Project Manager: <u>John Polk</u>	Organization: <u>NRRL Code 6115</u>
Address:	
Ship To:	
Organization:	
Address:	

202 4545 5252 Sampler (Signature)		Phone Number
LABORATORY ANALYSIS		
Fecal Coliforms 200ml in $\text{Na}_2\text{S}_2\text{O}_5$		
Nutrients		
Orthophosphate		
Dissolved Organic Carbon		
Particulate Organic Carbon		
TKN		
Total Phosphorus		
Total Suspended Soils		
Volatile suspended soils		
CBODs		
TDC		

Recommended Quantity and Preservative (Provide triple volume for QC samples)											
200ml in $\text{Na}_2\text{S}_2\text{O}_5$											
LABORATORY ANALYSIS											
Fecal Coliforms											
Nutrients											
Orthophosphate											
Dissolved Organic Carbon											
Particulate Organic Carbon											
TKN											
Total Phosphorus											
Total Suspended Soils											
Volatile suspended soils											
CBODs											
TDC											

Project Information		Sample Receipt	
Project Number:	<u>40</u>	Received Date:	<u>7/18/00</u>
Project Name:	<u>NRRL</u>	Quarantine:	<u>None</u>
Job Order Number:	<u>40</u>	Seal Number:	<u>40</u>
Via:	<u>Mail</u>	Barcode:	<u>40</u>
TAT:	<input type="checkbox"/> 24h <input type="checkbox"/> 48h <input type="checkbox"/> 72h <input type="checkbox"/> 1wk <input checked="" type="checkbox"/> 2wk	Sample Disposal Instructions:	<input type="checkbox"/> Pickup <input type="checkbox"/> Return <input type="checkbox"/> Disposal
Comments:			

Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>

Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>

Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>
Receiving Laboratory	Signature: <u>John Polk</u> Time: <u>15</u>
Printed Name: <u>John Polk</u> Date: <u>7/18/00</u>	Company: <u>NRRL</u>



## CHESAPEAKE ANALYTICAL LAB.

## CHAIN OF CUSTODY FORM

106A ROCKEFELLER CT. WALDORF, MD 20602

S-6 301-932-4775

SAMPLE SOURCE

John Polkman

COMPANY NAME, CONTACT PERSON &amp; PHONE NUMBER

NRL

Code 6115 4555 Overlook Ave SW

Wash D.C. 20375

CONTAINER TYPE:

P=PLASTIC  
G=GLASS

SAMPLE TYPE:

G=GRAB  
C=COMPOSIT

SAMPLE IDENTIFICATION

DATE

TIME

PRESERVATIVE

ANALYSIS REQUIRED

IN LAB  
pH

1. Event 1			H <sub>2</sub> SO <sub>4</sub>		TKN	
2. * K01-K107 KFB142 KERB1			dry ice			
3.						
4. Event 2			H <sub>2</sub> SO <sub>4</sub>		TKN	
* K115 - K228 KFB4 KFB1,6,7			ice			
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12. * Sample #1's missing						

RELEASED BY: John M. Miller D/T: / / REC'D BY: \_\_\_\_\_ D/T: / /RELEASED BY: John M. Miller D/T: 5/12/1425 REC'D BY: \_\_\_\_\_ D/T: / /SAMPLES RECEIVED IN LAB BY: John M. Miller DATE/TIME: 5/12 @ 1425 ICED? YES - NO TEMP \_\_\_\_\_

PH CHECKED IN LAB BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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# Chain of Custody

H2SO4 added to sampler w/Hg ~7 Date 6/21/01 Page 1 of 1  
 Recommended Quantity and Preservative (Provide triple volume for QC samples)

Project Manager:	John P. Gilligan
Organization:	U.S.N.R.L.
Address:	
Ship To:	
Organization:	
Address:	

LABORATORY ANALYSIS			
200ml in Na <sub>2</sub> SO <sub>4</sub> , 200ml in Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>			
FIELD CONDITIONS			
Temperature °C			
Conductivity µS/cm			
Dissolved Oxygen mg/L			
Turbidity °C			
RECEIPT CONDITIONS			
Temperature °C			
Conductivity µS/cm			
Dissolved Oxygen mg/L			
Turbidity °C			
Number of Containers			
5			
Temperature FROZEN on 7/5/01 0850			

Project Information	Sample Received
Project Number:	TOA/NT/01/001
Project Name:	Chemical Weathering
Job Order Number:	1
Via:	Sea
TAT:	<input type="checkbox"/> 24h <input type="checkbox"/> 48h <input type="checkbox"/> 72h <input type="checkbox"/> 1wk <input type="checkbox"/> 2wk
Comments:	Specimens for chemical weathering
<input type="checkbox"/> Disposal <input type="checkbox"/> Return <input type="checkbox"/> Pickup	

Rec'd Date 6/29/01 @ 1550

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	1/1/01
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

Project Information	Sample Received
Signature:	John P. Gilligan
Time:	0930
Printed Name:	John P. Gilligan
Date:	6/29/01
Company:	U.S. Naval Research Laboratory
Signature:	
Time:	
Printed Name:	
Date:	
Company:	
Signature:	
Time:	
Printed Name:	
Date:	
Company:	

# Dissolved Oxygen Titrations

WWMS Event 1

## Biological Oxygen Demand

Cycle	Anal ID	Bott_ID	Sta	TP	Time Stored	Time Fixed	Inc. (D)	Tit. Vol	Rep	mg O2/L	Avg.	Std Dev	BOD (mg/L)	Comments
1	1	20	5	t0	3/16/00 19:35		4.061	1	10.78					
2	27	t0					4.100	2	10.89	10.84	0.08			
4	79	t1	3/16/00 19:17	3/21/00 16:50	4.90	3.185	1	8.35						
5	5	t1					3.205	2	8.40	8.37	0.04	2.46		
6	21	4	t0	3/16/00 19:35		3.293	1	8.65						
7	6	t0					3.193	2	8.37	8.51	0.20			
8	28	t1	3/16/00 19:17	3/21/00 17:21	4.92	2.679	1	6.94						
9	1	t1					2.677	2	6.94	6.94	0.00	1.57		
10	80	1	t0	3/16/00 19:35		4.062	1	10.78						
11	23	t0					3.980	2	10.56	10.67	0.16			
12	4	t1	3/16/00 19:17	3/21/00 17:55	4.94	3.235	1	8.49						
13	86	t1					3.077	2	8.05	8.27	0.31	2.40		
14	22	2	t0	3/16/00 19:35		3.163	1	8.29						
15	24	t0					3.147	2	8.24	8.26	0.03			
16	12	t1	3/16/00 19:17	3/21/00 18:53	4.98	2.278	1	5.83						
17	33	t1					2.323	2	5.95	5.89	0.09	2.38		
18	9	3	t0	3/16/00 19:35		3.037	1	7.94						
19	2	t0					3.112	2	8.14	8.04	0.15			
20	19	t1	3/16/00 19:17	3/21/00 16:50	4.90	2.294	1	5.87						
21	35	t1					2.275	2	5.82	5.84	0.04	2.20		
2	22	87	5	t0	3/17/00 1:26		3.282	1	8.62					
23	10	t0					3.421	2	9.00	8.81	0.27			
24	81	t1	3/17/00 1:09	3/22/00 5:15	5.17	2.658	1	6.88						
25	32	t1					2.378	2	6.10	6.49	0.55	2.32		
26	74	4	t0	3/17/00 1:26		2.986	1	7.79						
27	30	t0					3.066	2	8.02	7.91	0.16			
28	97	t1	3/17/00 1:09	3/22/00 5:15	5.17	2.042	1	5.17						
29	25	t1					2		5.17	#DIV/0!	2.74			
30	29	1	t0	3/17/00 1:26		4.615	1	12.32						
31	18	t0					4.631	2	12.37	12.34	0.03			
32	73	t1	3/17/00 1:09	3/22/00 5:17	5.17	3.54	1	9.33						

68	102	t1	3/17/00 10:15	3/22/00 8:20	4.92	2.93	1	7.64		
69	96	t1			2.506	2	6.46	7.05	0.83	0.83
70	113	1	t0	3/17/00 10:15	3.531	1	9.31			
71	111		t0		3.544	2	9.35	9.33	0.03	
72	115	t1	3/17/00 10:15	3/22/00 9:00	4.95	1.479	1	3.60		
73	114	t1			1.52	2	3.72	3.66	0.08	5.67
74	91	2	t0	3/17/00 10:15		3.681	1	9.73		
75	103		t0		3.627	2	9.58	9.65	0.11	
76	82	t1	3/17/00 10:15	3/22/00 9:20	4.96	2.156	1	5.49		
77	78	t1			2.295	2	5.87	5.68	0.27	3.97
78	107	3	t0	3/17/00 10:15	3.505	1	9.24			
79	112		t0		3.475	2	9.15	9.19	0.06	
80	120	t1	3/17/00 10:15	3/22/00 9:25	4.97	2.485	1	6.40		
81	90		t1		2.653	2	6.87	6.63	0.33	2.56
5	82	124	5	t0	3/17/00 16:10	3.156	1	8.27		
83	127		t0		3.194	2	8.37	8.32	0.07	
84	125	t1	3/17/00 15:45	3/22/00 13:50	4.92	2.537	1	6.55		
85	128		t1		2.567	2	6.63	6.59	0.06	1.73
86	130	4	t0	3/17/00 16:12	3.294	1	8.65			
87	129		t0		3.21	2	8.42	8.53	0.17	
88	122	t1	3/17/00 15:45	3/22/00 14:15	4.94	2.125	1	5.40		
89	123		t1		2.175	2	5.54	5.47	0.10	3.06
90	121	3	t0	3/17/00 16:15	3.473	1	9.15			
91	118		t0		3.494	2	9.21	9.18	0.04	
92	126	t1	3/17/00 15:45	3/22/00 14:28	4.95	2.106	1	5.35		
93	135		t1		2.062	2	5.23	5.29	0.09	3.89
94	138	2	t0	3/17/00 16:17	3.472	1	9.14			
95	133		t0		3.411	2	8.98	9.06	0.12	
96	139	t1	3/17/00 15:45	3/22/00 14:45	4.96	1.225	1	2.90		
97	137		t1		2	2.90	#DIV/0!	6.16		
98	134	1	t0	3/17/00 16:19	3.843	1	10.18			
99	132		t0		3.836	2	10.16	10.17	0.01	
100	136	t1	3/17/00 15:45	3/22/00 15:01	4.97	2.131	1	5.42		
101	131		t1		2.039	2	5.16	5.29	0.18	4.88
6	102	43	1	t0	3/17/00 20:02	3.755	1	9.93		



138	53	1	t0	3/18/00 0:09	4.534	1	12.10	
139	127		t0		4.635	2	12.38	12.24
140	52	t1	3/17/00 23:58	5.22	2.618	1	6.77	
141	54	t1		2.839	2	7.39	7.08	0.43
8	142	156	5	t0	3.290	1	8.64	
143	146		t0	3.170	2	8.31	8.47	0.24
144	157	t1	3/18/00 4:30	5.03	2.426	1	6.24	
145	149	t1		2.256	2	5.76	6.00	0.33
146	60	4	t0	3.199	1	8.39		2.47
147	158	t0		3.152	2	8.26	8.32	0.09
148	124	t1	3/18/00 4:32	5.03	2.223	1	5.67	
149	155	t1		1.774	2	4.42	5.05	0.88
150	109	3	t0	3.242	1	8.51		3.27
151	119	t0		3.102	2	8.12	8.31	0.28
152	148	t1	3/18/00 4:34	5.03	0.634	1	1.26	
153	150	t1		1.262	2	3.00	2.13	1.23
154	147	2	t0	3/18/00 4:36	3.335	1	8.76	
155	153	t0		3.287	2	8.63	8.70	0.09
156	151	t1	3/18/00 4:36	5.03	1.25	1	2.97	
157	152	t1		1.296	2	3.10	3.03	0.09
158	145	1	t0	4.228	1	11.25		5.67
159	154	t0		4.108	2	10.91	11.08	0.24
160	121	t1	3/18/00 4:38	5.03	2.411	1	6.20	
161	53	t1		1.995	2	5.04	5.62	0.82
9	162	116	5	t0	3.066	1	8.02	5.46
163	42	t0			2		8.02	#DIV/0!
164	44	t1	3/18/00 8:00	4.95	3.441	1	9.06	
165	37	t1		3.473	2	9.15	9.10	0.06
166	156	4	t0	2.913	1	7.59		-1.09
167	127	t0		3.006	2	7.85	7.72	0.18
168	133	t1	3/18/00 8:00	4.97	2.338	1	5.99	
169	146	t1		2.326	2	5.96	5.98	0.02
170	145	2	t0	2.955	1	7.71		1.74
171	109	t0	3/18/00 8:00	3.060	2	8.00	7.85	0.21
172	119	t1	3/18/00 8:00	4.97	1.387	1	3.35	

173	60	t1			1.365	2	3.29	3.32	0.04	4.54
174	154	1	t0	3/18/00 8:00	3.994	1	10.60			
175	38	t0			4.004	2	10.62	10.61	0.02	
176	158	t1	3/18/00 8:00	3/23/00 7:36	4.98	2.614	1	6.76		
177	50	t1			2.517	2	6.49	6.63	0.19	3.98
178	147	3	t0	3/18/00 8:00			1			
179	153	t0			3.318	2	8.72	8.72		
180	118	t1	3/18/00 8:00	3/23/00 8:01	5.00	2.256	1	5.76		
181	57	t1			2.086	2	5.29	5.53	0.33	3.19
10	182	66	5	t0	3/18/00 12:15	3.419	1	9.00		
183	62	t0			3.294	2	8.65	8.82	0.25	
184	65	t1	3/18/00 10:30	3/23/00 11:46	5.05	2.756	1	7.15		
185	70	t1			2.791	2	7.25	7.20	0.07	1.62
186	116	4	t0	3/18/00 12:15		3.177	1	8.32		
187	45	t0			3.038	2	7.94	8.13	0.27	
188	55	t1	3/18/00 10:36	3/23/00 12:00	5.06	2.337	1	5.99		
189	68	t1			2.311	2	5.92	5.95	0.05	2.18
190	127	2	t0	3/18/00 12:15		3.354	1	8.82		
191	40	t0			3.248	2	8.52	8.67	0.21	
192	56	t1	3/18/00 11:13	3/23/00 12:05	5.04	1.548	1	3.80		
193	43	t1			1.396	2	3.37	3.59	0.30	5.08
194	63	1	t0	3/18/00 12:15		4.213	1	11.20		
195	67	t0			4.203	2	11.18	11.19	0.02	
196	140	t1	3/18/00 11:30	3/23/00 12:30	5.04	3.131	1	8.20		
197	71	t1			2.919	2	7.61	7.90	0.42	3.29
198	48	3	t0	3/18/00 12:15		3.035	1	7.93		
199	61	t0			3.045	2	7.96	7.94	0.02	
200	69	t1	3/18/00 10:57	3/23/00 12:35	5.07	1.381	1	3.33		
201	156	t1			1.32	2	3.16	3.25	0.12	4.70
11	202	15	5	t0	3/18/00 15:50	3.554	1	9.37		
203	113	t0			3.434	2	9.04	9.21	0.24	
204	94	t1	3/18/00 14:15	3/23/00 11:45	4.90	2.502	1	6.45		
205	91	t1			2.219	2	5.66	6.06	0.56	3.15
206	153	4	t0	3/18/00 15:50		3.136	1	8.21		
207	38	t0			3.162	2	8.28	8.25	0.05	

208	154	—	t1	3/18/00 14:30	3/23/00 12:00	4.90	2.255	2	5.76	5.76	#DIV/0!	2.49
209	42	—	t1									
210	103	3	t0	3/18/00 15:50			3.176	1	8.32			
211	112	—	t0				3.028	2	7.91	8.12	0.29	
212	104	—	t1	3/18/00 14:40	3/23/00 12:05	4.89	1.789	1	4.47			
213	111	—	t1				1.708	2	4.24	4.35	0.16	3.76
214	72	2	t0	3/18/00 15:50			3.214	1	8.43			
215	119	—	t0				3.184	2	8.34	8.39	0.06	
216	64	—	t1	3/18/00 14:55	3/23/00 12:30	4.90	1.434	1	3.48			
217	60	—	t1				1.389	2	3.35	3.42	0.09	4.97
218	77	1	t0	3/18/00 15:50			4.182	1	11.12			
219	107	—	t0				4.161	2	11.06	11.09	0.04	
220	147	—	t1	3/18/00 15:10	3/23/00 12:35	4.89	1.415	1	3.43			
221	99	—	t1				1.256	2	2.99	3.21	0.31	7.88

## Dissolved Oxygen Standards and Blanks

WWMS Event 1

Biological Oxygen Demand

Date of Standardization

3/11/00

### Standard

	<u>Tit. Vol. (ml)</u>
Rep 1	8.507
Rep 2	8.561
Rep 3	8.562
Average	8.543
Std Dev	0.031
% Error	0.37%

### Blank

	<u>1st Tit. Vol. (ml)</u>	<u>2nd Tit. Vol. (ml)</u>	<u>Blank</u>
Rep 1	2.234	2.014	0.22
Rep 2	2.217	1.992	0.225
Rep 3	2.212	2.13	0.082
Average			0.176
Std Dev			0.012
% Error			6.57%

#### Standard Factorization

Stand Vol. (ml)

2

Approx Titrant Conc.

0.014

Stand Factor

2

Titrant Vol (STD)

4.272

\*Equation Volume is the actual volume factored to what it would be if 10mls of the standard (0.01M KIO<sub>3</sub>) were titrated with an approximate 0.14M titrant\*

# Total Seston Sample Data Sheet

Sample Date: 3/16-3/18/00 Event 1

Cruise: Aracstia Wet Weather

Analysis Date: 3/29/00

SAMPLE_ID	REP	STATION	TIME	VOL	PREFILTER_WT (g)	POST FILTER_WT 103-105°C (g)	SESTON (g)	CONC. (mg/L)	Ave. SS Conc.	sd SS Conc.	POST FILTER WT 550°C	VSS BLANK	Uncorrected VSS BLANK	Corrected VSS BLANK	VSS CONC.	Ave. VSS	sd VSS
FB1	1	field blank		200	0.1280	0.1289	0.0009	4.5000			0.1355	-0.1355	-0.1372	#DIV/0!			
FB2	2	field blank									0.1261	-0.1261	-0.1278	-1.28			
FB3	3	field blank		100							0.1290	0.1290	0.1273	0.64			
EqB1	1	Eq blank		200	0.1278	0.1290	0.0012	6.0000			0.1261	-0.1261	-0.1278	#DIV/0!			
EqB2	2	Eq blank															
SS01	1	5	3/16/00 23:08	243	0.1275	0.1311	0.0036	14.8148	15.5102	0.9834	0.1289	0.0022	0.0005	2.06	2.61	0.7810	
SS02	2	5	3/16/00 23:08	253	0.1289	0.1330	0.0041	16.2055			0.1305	0.0025	0.0008	3.16			
SS03	1	4	3/16/00 23:23	255	0.1277	0.1368	0.0091	35.6363	34.7819	1.2790	0.1335	0.0033	0.0016	6.27	5.38	1.2620	
SS04	2	4	3/16/00 23:23	245	0.1284	0.1367	0.0063	33.8776			0.1339	0.0028	0.0011	4.49			
SS05	1	1	3/16/00 23:50	226	0.1266	0.1321	0.0055	24.3363	24.6136	0.3921	0.1297	0.0024	0.0007	3.10	3.51	0.5889	
SS06	2	1	3/16/00 23:50	229	0.1275	0.1332	0.0057	24.8308			0.1306	0.0026	0.0009	3.93			
SS07	1	2	3/17/00 0:14	225	0.1264	0.1354	0.0090	40.0000	40.0000		0.1322	0.0032	0.0015	6.67	6.67		
SS08	2	2		261	0.1282	0.1358	0.0076	29.1188			0.1274	0.0084	0.0067	25.67			
SS09	1	3	3/17/00 0:32	259	0.1280	0.1397	0.0117	45.1173	40.8055	6.1776	0.1361	0.0036	0.0019	7.34	7.34		
SS10	2	3		247	0.1268	0.1358	0.0090	36.4372			0.1200	0.0158	0.0141	57.09			
SS11	1	5	3/16/00 16:40	242	0.1288	0.1318	0.0030	12.3967	12.9780	0.8221	0.1295	0.0023	0.0006	2.48	2.72	0.3442	
SS12	2	5		236	0.1274	0.1306	0.0032	13.5593			0.1282	0.0024	0.0007	2.97			
SS13	1	4	3/16/00 17:20	276	0.1282	0.1330	0.0048	17.3913	19.2648	2.6495	0.1305	0.0025	0.0008	2.90	3.48	0.8248	
SS14	2	4		246	0.1280	0.1332	0.0052	21.1382			0.1305	0.0027	0.0010	4.07			
SS15	1	1	3/16/00 18:05	259	0.1277	0.1363	0.0086	33.2046	32.4868	1.0152	0.1331	0.0032	0.0015	5.79	5.24	0.7767	
SS16	2	1		277	0.1271	0.1359	0.0088	31.7690			0.1329	0.0030	0.0013	4.69			
SS17	1	2	3/16/00 18:25	245	0.1289	0.1395	0.0106	43.2653	42.2577	1.4250	0.1362	0.0033	0.0016	6.53	5.14	1.9662	
SS18	2	2		240	0.1260	0.1359	0.0099	41.2500			0.1333	0.0026	0.0009	3.75			
SS19	1	3	3/17/00 18:41	276	0.1260	0.1359	0.0099	35.8696	35.3409	0.7476	0.1327	0.0032	0.0015	5.43	5.62	0.2597	
SS20	2	3		293	0.1298	0.1400	0.0102	34.8123			0.1366	0.0034	0.0017	5.80			
SS21	1	5	3/17/00 3:36	229	0.1277	0.1318	0.0041	17.9039	17.1416	1.0781	0.1266	0.0032	0.0015	6.55	5.00	2.1934	
SS22	2	5		232	0.1271	0.1309	0.0038	16.3793			0.1284	0.0025	0.0008	3.45			
SS23	1	4	3/17/00 3:54	270	0.1274	0.1353	0.0079	29.2593	28.4982	1.0762	0.1313	0.0040	0.0023	8.52	7.54	1.3783	
SS24	2	4		274	0.1273	0.1349	0.0076	27.7372			0.1314	0.0035	0.0018	6.57			
SS25	1	3	3/17/00 4:30	256	0.1273	0.1336	0.0063	24.6094	24.0807	0.7476	0.1308	0.0028	0.0011	4.30	4.27	0.0352	
SS26	2	3		259	0.1297	0.1358	0.0061	23.5521			0.1330	0.0028	0.0011	4.25			
SS27A	1	2	3/17/00 4:50	238	0.1291	0.1300	0.0009	39.4958	39.3682	0.1805	0.1282	0.0018	0.0001	6.72	6.74	0.0201	

SS27B	1	2	238	0.1269	0.1354	0.0085			0.1322	0.0032	0.0015			
SS28	2	2	237	0.1292	0.1385	0.0093	35.2405		0.1352	0.0033	0.0016	6.75		
SS29	1	1	3/17/00 5:05	238	0.1285	0.1354	0.0069	28.5916	30.8575	2.6329	0.1327	0.0027	0.0010	4.20
SS30	2	1	226	0.1280	0.1354	0.0074	32.7434		0.1323	0.0031	0.0014	6.19		
SS31	1	5	3/17/00 8:03	253	0.1278	0.1336	0.0058	22.9249	23.3576	0.6119	0.1302	0.0034	0.0017	6.72
SS32	2	5	248	0.1272	0.1331	0.0059	23.7903		0.1298	0.0033	0.0016	6.45		
SS33	1	4	3/17/00 8:24	244	0.1272	0.1360	0.0088	36.0656	35.2668	1.1296	0.1320	0.0040	0.0023	9.43
SS34	2	4	235	0.1271	0.1352	0.0081	34.4681		0.1314	0.0038	0.0021	8.94		
SS35	1	1	3/17/00 8:56	261	0.1278	0.1379	0.0101	38.6973	39.1017	0.5719	0.1343	0.0036	0.0019	7.28
SS36	2	1	243	0.1285	0.1381	0.0096	39.5062		0.1348	0.0033	0.0016	6.58		
SS37	1	2	3/17/00 9:17	265	0.1278	0.1368	0.0090	33.9623	35.1630	1.6980	0.1337	0.0031	0.0014	5.28
SS38	2	2	220	0.1270	0.1350	0.0080	36.3636		0.1320	0.0030	0.0013	5.91		
SS39	1	3	3/17/00 9:35	278	0.1282	0.1410	0.0128	46.0432	45.2231	1.1598	0.1375	0.0035	0.0018	6.47
SS40	2	3	268	0.1279	0.1398	0.0119	44.4030		0.1366	0.0032	0.0015	5.60		
SS41	1	5	3/17/00 13:50	238	0.1281	0.1338	0.0057	23.9496	24.4748	0.7428	0.1312	0.0026	0.0009	3.78
SS42	2	5	240	0.1280	0.1340	0.0060	25.0000		0.1314	0.0026	0.0009	3.75		
SS43	1	4	3/17/00 14:10	269	0.1277	0.1374	0.0097	36.0595	36.9487	1.2575	0.1345	0.0029	0.0012	4.46
SS44	2	4	259	0.1296	0.1394	0.0098	37.8378		0.1359	0.0035	0.0018	6.95		
SS45	1	3	3/17/00 14:30	249	0.1293	0.1380	0.0097	38.9558	39.3684	0.5835	0.1359	0.0031	0.0014	5.62
SS46	2	3	274	0.1296	0.1405	0.0109	39.7810		0.1368	0.0037	0.0020	7.30		
SS47	1	2	3/17/00 14:50	259	0.1295	0.1377	0.0082	31.6602	32.1799	0.7350	0.1346	0.0031	0.0014	5.41
SS48	2	2	263	0.1299	0.1385	0.0086	32.6996		0.1352	0.0033	0.0016	6.08		
SS49	1	1	3/17/00 15:08	257	0.1292	0.1422	0.0130	50.5837	50.1989	0.5441	0.1382	0.0040	0.0023	8.95
SS50	2	1	269	0.1297	0.1431	0.0134	49.8141		0.1390	0.0041	0.0024	8.92		
SS51	2	5	3/17/00 19:40	258	0.1280	0.1341	0.0061	23.6434	24.3217	0.9593	0.1314	0.0027	0.0010	3.88
SS52	1	5	232	0.1277	0.1335	0.0058	25.0000		0.1332	0.0033	0.0016	6.95		
SS53	2	4	3/17/00 19:30	243	0.1281	0.1352	0.0071	29.2181	29.7000	0.6814	0.1321	0.0031	0.0014	5.76
SS54	1	4	275	0.1281	0.1364	0.0083	30.1818		0.1334	0.0030	0.0013	4.73		
SS55	2	3	3/17/00 19:15	249	0.1271	0.1377	0.0106	42.5703	41.7485	1.1622	0.1348	0.0029	0.0012	4.82
SS56	1	3	259	0.1289	0.1395	0.0106	40.9266		0.1332	0.0033	0.0016	6.18		
SS57	2	2	3/17/00 19:00	242	0.1287	0.1385	0.0098	40.4959	39.4787	1.4385	0.1345	0.0040	0.0023	9.50
SS58	1	2	260	0.1290	0.1390	0.0100	38.4615		0.1355	0.0035	0.0018	6.92		
SS59	2	1	3/17/00 18:50	258	0.1284	0.1359	0.0075	29.0698	34.6870	7.9439	0.1330	0.0029	0.0012	4.65
SS60	1	1	263	0.1272	0.1378	0.0106	40.3042		0.1326	0.0053	0.0036	13.69		
SS61	1	5	3/17/00 22:50	279	0.1281	0.1553	0.0072	25.8065	26.8817	1.5207	0.1324	0.0029	0.0012	4.30
SS62	2	5	279	0.1285	0.1363	0.0078	27.9570		0.1307	0.0056	0.0039	13.98		
SS63	1	4	3/17/00 22:35	X	0.1266	0.1383	0.0117	39.6429	#DIV/0!	0.1346	0.0037	0.0020	#VALUE!	####
SS64	2	4	280	0.1281	0.1392	0.0111	39.6429		0.1373	0.0019	0.0002	0.71		
SS65	1	3	3/17/00 22:20	279	0.1295	0.1427	0.0132	47.3118	47.3118	#DIV/0!	0.1393	0.0034	0.0017	6.09

SS66	2	3	X	0.1279	0.1420	0.0141	0.1381	0.0039	0.0022	#VALUE!	
SS67	1	2	3/17/00 23:05	286	0.1271	0.1412	0.0141	49.3007	45.4682	5.4200	0.0054
SS68	2	2	269	0.1284	0.1396	0.0112	41.6357	0.1363	0.0033	0.0016	5.95
SS69	1	1	3/17/00 23:20	249	0.1282	0.1391	0.0109	43.7751	41.9250	2.6164	0.0030
SS70	2	1	267	0.1280	0.1387	0.0107	40.0749	0.1355	0.0032	0.0015	5.62
SS71	1	5	3/19/00 2:51	280	0.1272	0.1362	0.0090	32.1429	30.2583	2.6652	0.0037
SS72	2	5	289	0.1282	0.1364	0.0082	28.3737	0.1335	0.0029	0.0012	4.15
SS73	1	4	3/18/00 2:20	284	0.1270	0.1383	0.0113	39.7787	39.2206	0.8035	0.0040
SS74	2	4	282	0.1274	0.1383	0.0109	38.6525	0.1343	0.0023	0.0010	#DIV/0!
SS75	1	3	3/18/00 2:35	260	0.1273	0.1414	0.0141	54.2308	53.2972	1.3203	0.0020
SS76	2	3	275	0.1277	0.1421	0.0144	52.3636	0.1381	0.0040	0.0023	8.36
SS77	1	2	3/18/00 3:55	295	0.1287	0.1411	0.0124	42.0339	41.4322	0.8510	0.0039
SS78	2	2	289	0.1263	0.1381	0.0118	40.8304	0.1347	0.0034	0.0017	5.88
SS79	1	1	3/18/00 3:35	294	0.1268	0.1360	0.0092	31.2925	43.1463	16.7637	0.0028
SS80	2	1	200	0.1264	0.1374	0.0110	55.0000	0.1340	0.0034	0.0017	8.50
SS81	1	5	3/18/00 6:45	270	0.1278	0.1325	0.0047	17.4074	17.1351	0.3851	0.0022
SS82	2	5	255	0.1278	0.1321	0.0043	16.8627	0.1303	0.0005	1.85	1.85
SS83	1	4	3/18/00 7:00	275	0.1292	0.1397	0.0105	38.1818	36.9091	1.7999	0.0028
SS84	2	4	275	0.1274	0.1372	0.0098	35.5364	0.1339	0.0033	0.0016	5.82
SS85	1	2	3/18/00 7:20	250	0.1282	0.1384	0.0102	40.8000	36.1500	6.5761	0.0132
SS86	2	2	200	0.1287	0.1350	0.0053	31.5000	0.1312	0.0027	0.0010	
SS87	1	1	3/18/00 7:40	200	0.1287	0.1339	0.0052	26.0000	25.0000	1.4142	0.1315
SS88	2	1	200	0.1277	0.1325	0.0048	24.0000	0.1302	0.0023	0.0006	3.00
SS89	1	3	3/18/00 8:00	200	0.1282	0.1334	0.0052	26.0000	26.0000	0.0000	0.1307
SS90	2	3	200	0.1287	0.1339	0.0052	26.0000	0.1312	0.0027	0.0010	5.00
SS91	1	5	3/18/00 10:30	200	0.1287	0.1311	0.0024	12.0000	12.2500	0.3536	0.1291
SS92	2	5	200	0.1288	0.1313	0.0025	12.5000	0.1291	0.0022	0.0005	2.50
SS93	1	4	3/18/00 10:36	200	0.1289	0.1333	0.0044	22.0000	23.0000	1.4142	0.1310
SS94	2	4	200	0.1297	0.1345	0.0048	24.0000	0.1314	0.0031	0.0014	7.00
SS95	1	3	3/18/00 10:57	200	0.1290	0.1359	0.0069	34.5000	36.5000	2.8284	0.1332
SS96	2	3	200	0.1303	0.1380	0.0077	38.5000	0.1350	0.0030	0.0013	6.50
SS97	1	2	3/18/00 11:13	200	0.1299	0.1397	0.0098	49.0000	49.2500	0.3536	0.1361
SS98	2	2	200	0.1292	0.1391	0.0099	49.5000	0.1358	0.0033	0.0016	8.00
SS99	1	1	3/18/00 11:30	200	0.1291	0.1355	0.0064	32.0000	29.0000	4.2426	0.1330
SS100	2	1	200	0.1291	0.1343	0.0052	26.0000	0.1323	0.0020	0.0003	1.50
SS101	1	5	3/18/00 14:15	200	0.1281	0.1312	0.0031	15.5000	15.5000	0.0000	0.1288
SS102	2	5	200	0.1281	0.1312	0.0031	15.5000	0.1290	0.0022	0.0005	2.50
SS103	1	4	3/18/00 14:30	200	0.1287	0.1331	0.0044	22.0000	22.0000	0.0000	0.1306
SS104	2	4	200	0.1291	0.1335	0.0044	22.0000	0.1310	0.0025	0.0008	4.00

SS105	1	3	3/19/00 14:40	200	0.1298	0.1381	0.0063	31.5000	31.0000	0.7071	0.1331	0.0030	0.0013	6.50	5.75	5.75	1.0607
SS106	2	3		200	0.1288	0.1349	0.0061	30.5000		0.1322	0.0027	0.0010	5.00				
SS107	1	2	3/18/00 14:55	200	0.1282	0.1393	0.0111	55.5000	56.5000	1.4142	0.1355	0.0038	0.0021	10.50	9.75	1.0607	
SS108	2	2		200	0.1298	0.1413	0.0115	57.5000		0.1378	0.0035	0.0018	9.00				
SS109	1	1	3/18/00 15:10	200	0.1302	0.1342	0.0040	20.0000	21.2500	1.7678	0.1321	0.0021	0.0004	2.00	3.00	1.4142	
SS110	2	1		200	0.1300	0.1345	0.0045	22.5000		0.1320	0.0025	0.0008	4.00				

## Total Seston Blank Data Sheet

Sample Date: 3/16-3/18/00 Event 1

Cruise: Anacstia Wet Weather

Analysis Date: 3/29/00

SAMPLE	Pre-Ignition-Blank	Post-Ignition Blank	
	WT (g)	WT (g)	Difference
B1	0.1270	0.1253	0.0017
B2	0.1267	0.1254	0.0013
B3	0.1300	0.1280	0.0020

0.0017	Avg.
0.0003512	StdDev

**Ammonia Event #1**

Run Results Report

Results: A:\EVNT1&amp;2.RST

Results completed: 15:31 September 15, 2000.

Operator: MITCH

Time	Cup	Name	Height	Ammonia mg/L	Calc.	Flags
10:22	0	Carryover	962.027	0.010487		
10:23	0	Carryover	90.24725	9.71E-05		
10:25	0	Baseline	-1.53E-05	-0.000978	BL	
10:26	0	Cal 0	234.1581	0.001812		
10:28	1	Cal 1	12819.51	0.151799		
10:29	2	Cal 2	104382	1.243002		
10:31	3	Cal 3	167766.1	1.998387		
10:32	0	BLANK	-635.1459	-0.008548	LO	
10:34	0	BLANK	-543.9033	-0.00746	LO	
10:35	4	ICV	120777.6	1.438398		4.1%
10:37	0	READ B/L	0	-0.000978	BL	
10:38	5	N13	38554.43	0.458497		
10:40	6	N15	44304.55	0.527024		
10:41	7	N17	3678.939	0.042866		
10:43	8	N19	17783.89	0.210962		
10:44	9	N21	33674.91	0.400345		
10:46	10	N23	1057.494	0.011624		
10:47	11	N25	8186.779	0.096588		
10:49	12	N27	-7180.327	-0.08655	LO	
10:50	13	N29	2782.312	0.03218		
10:52	14	N31	11975.79	0.141744		
10:53	14	N31	44094.07	0.524516		
10:55	0	BLANK	-899.1579	-0.011694	LO	
10:56	0	BLANK	-493.1416	-0.006855	LO	
10:58	71	CCV	107558.7	1.280861		3.3%
10:59	0	READ B/L	0	-0.000978	BL	
11:01	15	N30 DUP.	11599.16	0.137255		
11:02	16	N33	34265.63	0.407385		
11:04	17	N35	43434.66	0.516657		
11:05	18	N37	9718.557	0.114843		
11:07	19	N36 DUP	9818.578	0.116035		
11:08	20	N39	45398.88	0.540066		
11:10	21	N41	45353.95	0.539531		
11:11	22	N43	31406.96	0.373316		
11:13	23	N45	41894.72	0.498305		
11:14	24	N47	10484.74	0.123974		
11:16	24	N47	10380.82	0.122736		
11:17	0	BLANK	-825.3615	-0.010815	LO	
11:19	0	BLANK	-204.1137	-0.003411	LO	
11:20	71	CCV	107018.5	1.274423		2.8%

Samples Indicated with a bold "I" exceeded the CCV value by more than 11%.

11:22	0 READ B/L	0	-0.000978	BL
11:23	25 N49	11365.53	0.134471	
11:25	26 N51	29188.16	0.346874	
11:26	27 N53	40029.66	0.476078	
11:28	28 N55	41479.44	0.493356	
11:29	29 N57	24757.92	0.294076	
11:31	30 N56 DUP	24643.03	0.292707	
11:32	31 N59	11630.33	0.137627	
11:34	32 N61	11988.96	0.141901	
11:35	33 N63	8795.002	0.103837	
11:37	34 N65	14418.15	0.170851	
11:38	34 N65	14451.07	0.171243	
11:40	0 BLANK	-121.1011	-0.002422	LO
11:41	0 BLANK	-203.7317	-0.003406	LO
11:43	72 CCV	107191.6	1.276486	2.9%
11:44	0 READ B/L	0	-0.000978	BL
11:46	35 N67	32347.89	0.38453	
11:47	36 N69	43990.6	0.523283	
11:49	37 N71	37116.76	0.441363	
11:50	38 N73	42095.56	0.500699	
11:52	39 N75	34881.57	0.414725	
11:53	40 N77	20442.51	0.242647	
11:55	41 N76 DUP	257160.4	3.06375	HI
11:56	42 N79	7040.059	0.082922	FL
11:58	43 N81	8610.341	0.101636	FL
11:59	44 N83	42571.59	0.506372	
12:01	0 BLANK	-183.5911	-0.003166	LO
12:02	0 BLANK	84.59563	2.98E-05	
12:04	72 CCV	108789.5	1.295529	4.5%
12:05	0 READ B/L	0	-0.000978	BL
12:07	45 N85	38720.58	0.460477	
12:08	46 N87	43135.15	0.513088	
12:10	47 N89	9033.433	0.106678	
12:11	48 N91	9830.521	0.116178	
12:13	49 N101	22650.9	0.268965	
12:14	50 N99	45114.21	0.536674	
12:16	51 N95	39904.73	0.474589	
12:17	52 N93	11687.51	0.138308	
12:19	53 N97	38179.46	0.454028	
12:20	53 N97	38525.24	0.458149	
12:22	54 N96 DUP	36443.18	0.433336	
12:23	0 BLANK	-274.8562	-0.004254	LO
12:25	0 BLANK	-471.8942	-0.006602	LO
12:26	73 CCV	108535.7	1.292504	4.2%
12:28	0 READ B/L	0	-0.000978	BL
12:29	55 N103	41735.5	0.496408	I
12:31	56 N105	46262.25	0.550355	I
12:32	57 N107	45198.04	0.537673	I
12:34	58 N109	35242.04	0.419021	I

Samples Indicated with a bold "I" exceeded the CCV value by more than 11%.

12:35	59 <b>N111</b>	11549.15	0.13666	I
12:37	60 <b>N113</b>	49860.22	0.593234	I
12:38	61 <b>N115</b>	47346.13	0.563273	I
12:40	62 <b>N117</b>	50082.91	0.595888	I
12:41	63 <b>N116 DUP</b>	47683.78	0.567297	I
12:43	64 <b>N119</b>	46912.7	0.558107	I
12:44	0 BLANK	7366.883	0.086817	I
12:46	0 BLANK	8111.231	0.095688	I
12:47	73 CCV	125229.8	1.491457	F
12:49	0 READ B/L	0.000488	-0.000978	BL
12:50	65 <b>N121</b>	22609.43	0.268471	I
15:24	28 N77 RE C	21350.37	0.253466	
15:26	29 N76 DUP	27277.48	0.324103	

Samples Indicated with a bold "I" exceeded the CCV value by more than 11%.

**TON Event #1**

Run Results Report

Results: A:\ORTHO\BEVNT1&amp;2.RST

Results completed: 16:35 September 22, 2000.

Operator: MITCH

Time	Cup	Name	Height	Calc.	Nitrate+Nitrite Flags	Cal. Error
9:44	0	Carryover	348.8717	-0.019482	LO	
9:46	0	Carryover	82.51909	-0.019945	LO	
9:48	0	Baseline	2.86E-06	-0.020088	BL	
9:50	0	Cal 0	-40.64071	-0.020159	LO	
9:52	1	Cal 1	97973.72	0.150219		
9:54	2	Cal 2	762093.9	1.304656		
9:56	3	Cal 3	1139261	1.960284		
9:58	0	BLANK	-163.7339	-0.020373	LO	
10:00	0	BLANK	-106.6938	-0.020274	LO	
10:02	4	ICV	869752.9	1.4918		0.55%
10:04	0	READ B/L	1.53E-05	-0.020088	BL	
10:06	8	NO2 1.5	834419.8	1.43038		
10:08	9	NO3 1.5	867077.9	1.487149		
10:10	10	N13	583983.5	0.995048		
10:12	11	N15	569831.5	0.970447		
10:14	12	N17	558958.7	0.951547		
10:16	13	N19	525304.9	0.893047		
10:18	14	N21	550552.7	0.936935		
10:20	15	N23	107320.1	0.166466		
10:22	16	N25	106491.7	0.165026		
10:24	17	N27	84505.15	0.126807		
10:26	18	N29	59099.43	0.082644		
10:28	19	N31	63019.57	0.089458		
10:30	0	BLANK	-289.545	-0.020592	LO	
10:32	0	BLANK	-256.4296	-0.020534	LO	
10:34	5	CCV	740660	1.267398		-2.21%
10:36	0	READ B/L	0	-0.020088	BL	
10:38	20	N30 DUP.	115197.1	0.180158		
10:40	21	N33	611890.1	1.043558		
10:42	22	N35	551808.2	0.939117		
10:44	23	N37	537271.3	0.913848		
10:46	24	N36 DUP	529668.9	0.900633		
10:48	25	N39	557485.3	0.948986		
10:50	26	N41	566102.8	0.963966		
10:52	27	N43	617181.3	1.052755		
10:54	28	N45	568783.8	0.968626		
10:56	29	N47	515449.9	0.875916		
10:58	0	BLANK	-186.5128	-0.020413	LO	
11:00	0	BLANK	-107.957	-0.020276	LO	
11:02	5	CCV	735568.8	1.258548		-1.50%

11:04	0 READ B/L	0	-0.020088	BL
11:06	30 N49	509841.9	0.866168	
11:08	31 N51	540120.6	0.918801	
11:10	32 N53	567708	0.966756	
11:12	33 N55	549934.1	0.93586	
11:14	34 N57	503339.9	0.854865	
11:16	35 N56 DUP	522390.5	0.887981	
11:18	36 N59	505554	0.858714	
11:20	37 N61	571038.3	0.972545	
11:22	38 N63	507869.1	0.862738	
11:24	39 N65	523654.4	0.890178	
11:26	0 BLANK	-179.7392	-0.020401	LO
11:28	0 BLANK	-112.671	-0.020284	LO
11:30	6 CCV	753576.1	1.28985	-4.02%
11:32	0 READ B/L	0	-0.020088	BL
11:34	40 N67	528335	0.898314	
11:36	41 N69	561489.4	0.955946	
11:38	42 N71	587186.8	1.000616	
11:40	43 N73	576632.4	0.982269	
11:42	44 N75	528940	0.899366	
11:44	45 N77	525333.5	0.893097	
11:46	46 N76 DUP	522623.7	0.888386	
11:48	47 N79	496600.8	0.843151	
11:50	48 N81	537398.4	0.914069	
11:52	49 N83	512909.3	0.8715	
11:54	0 BLANK	-141.2757	-0.020334	LO
11:56	0 BLANK	-128.2437	-0.020311	LO
11:58	6 CCV	717155.6	1.22654	1.09%
12:00	0 READ B/L	0	-0.020088	BL
12:02	50 N85	546232.8	0.929426	
12:04	51 N87	566499.7	0.964656	
12:06	52 N89	500435.4	0.849816	
12:08	53 N91	526827.8	0.895694	
12:10	54 N101	656146.1	1.120488	
12:12	55 N99	563983.5	0.960282	
12:14	56 N95	515108.1	0.875322	
12:16	57 N93	521362.3	0.886194	
12:18	58 N97	533206.4	0.906782	
12:20	59 N96 DUP	518081.8	0.880491	
12:22	0 BLANK	-118.908	-0.020295	LO
12:24	0 BLANK	-69.60396	-0.020209	LO
12:26	7 CCV	741607.9	1.269046	-2.34%
12:28	0 READ B/L	0	-0.020088	BL
12:30	60 N103	563674.7	0.959745	
12:32	61 N105	558595.1	0.950915	
12:34	62 N107	515833	0.876582	
12:36	63 N109	503152.6	0.85454	
12:38	64 N111	534499.7	0.90903	
12:40	65 N113	569012.1	0.969023	

12:42	66 N115	530941.3	0.902845	
12:44	67 N117	510259.6	0.866894	
12:46	68 N116 DUP	514469.8	0.874212	
12:48	69 N119	498173.6	0.845885	
12:50	0 BLANK	-103.1161	-0.020268	LO
12:52	0 BLANK	-123.3193	-0.020303	LO
12:54	7 CCV	727130.6	1.24388	-0.31%
12:56	0 READ B/L	0	-0.020088	BL
12:58	70 N121	523904.2	0.890612	

**O-PO4 Event #1**

Run Results Report

Results: A:\ORTHOPI\BEVNT1&amp;2.RST

Results completed: 16:35 September 22, 2000.

Operator: MITCH

Time	Cup	Name	Height	Calc.	Flags	Ortho-Phosphate Cal. Error
9:44	0	Carryover	101.8268	0.003762		
9:46	0	Carryover	28.73068	0.003268		
9:48	0	Baseline	1.19E-06	0.003074	BL	
9:50	0	Cal 0	-36.92448	0.002825		
9:52	1	Cal 1	21217.23	0.146265		
9:54	2	Cal 2	184122.2	1.245679		
9:56	3	Cal 3	295471.9	1.997156		
9:58	0	BLANK	-53.2117	0.002715		
10:00	0	BLANK	-46.38968	0.002761		
10:02	4	ICV	203618.9	1.377258		8.18%
10:04	0	READ B/L	0	0.003074	BL	
10:06	8	NO2 1.5	-107.7903	0.002347		
10:08	9	NO3 1.5	-78.609	0.002544		
10:10	10	N13	555.9808	0.006827		
10:12	11	N15	604.0087	0.007151		
10:14	12	N17	587.3177	0.007038		
10:16	13	N19	385.9683	0.005679		
10:18	14	N21	1036.172	0.010067		
10:20	15	N23	3259.433	0.025072		
10:22	16	N25	4244.693	0.031721		
10:24	17	N27	4266.092	0.031866		
10:26	18	N29	4227.389	0.031604		
10:28	19	N31	4759.817	0.035198		
10:30	0	BLANK	-33.0098	0.002852		
10:32	0	BLANK	-51.68384	0.002726		
10:34	5	CCV	185622.8	1.255806		-1.27%
10:36	0	READ B/L	0	0.003074	BL	
10:38	20	N30 DUP.	4984.543	0.036714		
10:40	21	N33	767.976	0.008257		
10:42	22	N35	489.3773	0.006377		
10:44	23	N37	139.1339	0.004013		
10:46	24	N36 DUP	184.5616	0.00432		
10:48	25	N39	783.6155	0.008363		
10:50	26	N41	468.6201	0.006237		
10:52	27	N43	851.6001	0.008822		
10:54	28	N45	503.3187	0.006471		
10:56	29	N47	731.2665	0.00801		
10:58	0	BLANK	-75.85615	0.002563		
11:00	0	BLANK	-67.7113	0.002618		
11:02	5	CCV	186578.8	1.262258		-1.79%

11:04	0 READ B/L	0	0.003074	BL
11:06	30 N49	124.5535	0.003915	
11:08	31 N51	234.4922	0.004657	
11:10	32 N53	545.1761	0.006754	
11:12	33 N55	380.3551	0.005641	
11:14	34 N57	112.7701	0.003836	
11:16	35 N56 DUP	573.6205	0.006946	
11:18	36 N59	139.6695	0.004017	
11:20	37 N61	222.7254	0.004578	
11:22	38 N63	996.1394	0.009797	
11:24	39 N65	226.8935	0.004606	
11:26	0 BLANK	-77.04749	0.002555	
11:28	0 BLANK	-94.0784	0.00244	
11:30	6 CCV	186058.5	1.258746	-1.51%
11:32	0 READ B/L	0	0.003074	BL
11:34	40 N67	1671.229	0.014353	
11:36	41 N69	899.3674	0.009144	
11:38	42 N71	820.9323	0.008615	
11:40	43 N73	515.2735	0.006552	
11:42	44 N75	152.7015	0.004105	
11:44	45 N77	24.1607	0.003238	
11:46	46 N76 DUP	235.7172	0.004665	
11:48	47 N79	159.6449	0.004152	
11:50	48 N81	160.0976	0.004155	
11:52	49 N83	235.8856	0.004666	
11:54	0 BLANK	-77.10915	0.002554	
11:56	0 BLANK	-99.00578	0.002406	
11:58	6 CCV	183450.1	1.241143	-0.09%
12:00	0 READ B/L	0	0.003074	BL
12:02	50 N85	444.5763	0.006075	
12:04	51 N87	172.9641	0.004242	
12:06	52 N89	180.9049	0.004295	
12:08	53 N91	301.4262	0.005109	
12:10	54 N101	1361.477	0.012263	
12:12	55 N99	510.1956	0.006518	
12:14	56 N95	203.8607	0.004445	
12:16	57 N93	218.8841	0.004552	
12:18	58 N97	435.1957	0.006012	
12:20	59 N96 DUP	430.4652	0.00598	
12:22	0 BLANK	-63.28812	0.002647	
12:24	0 BLANK	-67.49094	0.002619	
12:26	7 CCV	185974.5	1.25818	-1.47%
12:28	0 READ B/L	0	0.003074	BL
12:30	60 N103	739.4755	0.008065	
12:32	61 N105	370.4474	0.005575	
12:34	62 N107	135.5311	0.003989	
12:36	63 N109	159.4541	0.004151	
12:38	64 N111	184.6846	0.004321	
12:40	65 N113	723.711	0.007959	

12:42	66 N115	276.9799	0.004944
12:44	67 N117	88.52283	0.003672
12:46	68 N116 DUP	181.1767	0.004297
12:48	69 N119	133.9318	0.003978
12:50	0 BLANK	-69.0347	0.002609
12:52	0 BLANK	-68.4446	0.002613
12:54	7 CCV	183394.8	1.24077
12:56	0 READ B/L	0	0.003074 BL
12:58	70 N121	184.1198	0.004317

**Total Phosphate Event #1**

Run Results Report

Results: A:\EVNT1&amp;2T.RST

Results completed: 15:07 September 26, 2000.

Operator: MITCH

**TOTAL PHOSPHATE**

Time	Cup	Name	Height	Calc.	Flags
12:23	0	Carryover	99.29343	0.025919	
12:25	0	Carryover	18.9302	0.024347	
12:27	0	Baseline		0	0.023977 BL
12:29	0	Cal 0	-27.07494	0.023447	
12:31	1	Cal 1	4850.708	0.118864	
12:33	2	Cal 2	60268.7	1.202925	
12:35	3	Cal 3	102334	2.025787	
12:37	0	BLANK	-22.1444	0.023544	
12:39	0	BLANK	-31.77597	0.023355	
12:41	4	ICV	70858.35	1.410075	6.00%
12:43	0	READ B/L	1.91E-06	0.023977 BL	
12:45	8	P13	1235.926	0.048153	
12:47	9	P15	1182.568	0.04711	
12:49	10	P17	556.0339	0.034854	
12:51	11	P19	960.4337	0.042764	
12:53	12	P21	2387.96	0.070689	
12:55	13	P23	922.6324	0.042025	
12:57	14	P25	919.8267	0.04197	
12:59	15	P27	912.8945	0.041834	
13:01	16	P29	1075.764	0.04502	
13:03	17	P31	692.7634	0.037528	
13:05	0	BLANK	-86.12939	0.022292	
13:07	0	BLANK	-108.5279	0.021854	
13:09	5	CCV	60047.68	1.198601	3.34%
13:11	0	READ B/L	0	0.023977 BL	
13:13	18	P30 DUP.	1315.317	0.049706	
13:15	19	P35	499.9631	0.033757	
13:17	20	P37	2262.641	0.068238	
13:19	21	P36 DUP	1222.368	0.047888	
13:21	22	P39	1825.733	0.059691	
13:23	23	P41	1780.108	0.058798	
13:25	24	P43	1225.904	0.047957	
13:27	25	P45	976.7578	0.043084	
13:29	26	P47	1001.524	0.043568	
13:31	27	P49	717.2662	0.038008	
13:33	0	BLANK	-114.5387	0.021736	
13:35	0	BLANK	-131.3722	0.021407	
13:37	5	CCV	58738.04	1.172983	5.40%
13:39	0	READ B/L	0	0.023977 BL	
13:41	28	P51	726.3535	0.038185	

13:43	29 P53	1192.856	0.047311	
13:45	30 P55	502.442	0.033805	
13:47	31 P57	928.9414	0.042148	
13:49	32 P56 DUP	7494.983	0.17059	
13:51	33 P59	452.4023	0.032827	
13:53	34 P61	2404.929	0.071021	
13:55	35 P63	2824.031	0.079219	
13:57	36 P65	1272.944	0.048878	
13:59	37 P67	2457.495	0.072049	
14:01	0 BLANK	-98.07195	0.022058	
14:03	0 BLANK	-119.0222	0.021649	
14:05	5 CCV	58132.8	1.161143	6.36%
14:07	0 READ B/L	0	0.023977 BL	
14:09	38 P69	1048.178	0.044481	
14:11	39 P71	1357.795	0.050537	
14:13	40 P73	1035.916	0.044241	
14:15	41 P75	749.2618	0.038634	
14:17	42 P77	1823.163	0.059641	
14:19	43 P76 DUP	1371.178	0.050799	
14:21	44 P79	813.4725	0.03989	
14:23	45 P81	409.5955	0.031989	
14:25	46 P83	693.0684	0.037534	
14:27	47 P85	938.1823	0.042329	
14:29	0 BLANK	-108.7902	0.021849	
14:31	0 BLANK	-112.5846	0.021775	
14:33	5 CCV	58570.41	1.169704	5.67%
14:35	0 READ B/L	7.63E-06	0.023977 BL	
14:37	48 P87	438.6432	0.032557	
14:39	49 P89	833.812	0.040287	
14:41	50 P91	394.046	0.031685	
14:43	51 P101	574.2648	0.03521	
14:45	52 P99	901.8271	0.041618	
14:47	53 P95	-1919.171	0.061519	
14:49	54 P93	1674.225	0.056727	
14:51	55 P96 DUP	1096.179	0.04542	
14:53	56 P103	534.4223	0.034431	
14:55	57 P105	1345.9	0.050305	
14:57	0 BLANK	-120.7057	0.021616	
14:59	0 BLANK	-128.9952	0.021453	
15:01	5 CCV	57083.97	1.140627	8.01%
15:03	0 READ B/L	-7.63E-06	0.023977 BL	
15:44	58 P107	1100.142	0.05066	
15:46	59 P109	1556.56	0.059927	
15:48	60 P111	1565.42	0.060107	
15:50	61 P113	1242.111	0.053543	
15:52	62 P115	1072.238	0.050093	
15:54	63 P117	1511.562	0.059014	
15:56	64 P116 DUP	299.1033	0.034395	
15:58	65 P119	2764.336	0.084451	

16:00	66 P121	288.8591	0.034187
16:02	67 P223	6575.874	0.161844
16:04	0 BLANK	-157.8556	0.025116
16:06	0 BLANK	-145.9809	0.025357
16:08	5 CCV	54005	1.124887
16:10	0 READ B/L	0	0.028322 BL

Organics

Event 1

D/TC16		2	4.22	4.61	0.99	4.20
D/TC17	1	3	3/17/00 4:50	4.74	4.52	0.31
D/TC18	2	1	3/17/00 5:05	4.30	6.03	0.35
D/TC19	1	3	3/17/00 5:05	3.90	3.91	0.02
D/TC20	2			3.93	4.61	0.07
D/TC21	1	4	3/17/00 8:03	3.22	3.42	0.28
D/TC22	2			3.62	4.27	0.14
D/TC23	1	4	3/17/00 8:24	3.74	3.79	0.08
D/TC24	2			3.85	4.36	0.12
D/TC25	1	4	3/17/00 8:56	6.01	5.92	0.12
D/TC26	2			5.84	7.68	0.15
D/TC27	1	4	3/17/00 9:17	4.29	4.30	0.02
D/TC28	2			4.32	5.27	0.02
D/TC29	1	4	3/17/00 9:35	4.36	4.43	0.10
D/TC30	2			4.51	5.79	0.02
D/TC31	1	5	3/17/00 13:50	3.71	3.64	0.10
D/TC32	2			3.56	4.08	0.08
D/TC33	1	5	3/17/00 14:10	4.19	4.19	0.01
D/TC34	2			4.18	5.47	0.22
D/TC35	1	5	3/17/00 14:30	4.25	4.10	0.22
D/TC36	2			3.94	5.55	0.03
D/TC37	1	5	3/17/00 14:50	5.85	5.89	0.06
D/TC38	2			5.93	7.49	0.06
D/TC39	1	5	3/17/00 15:08	5.41	5.38	0.03
D/TC40	2			5.36	6.69	0.03
D/TC41	1	6	3/17/00 18:50	#####	#####	0.03
D/TC42	2			#####	5.74	0.03
D/TC43	1	6	3/17/00 19:00	#####	5.54	0.03
D/TC44	2			5.15	5.96	0.03
D/TC45	1	6	3/17/00 19:15	4.37	4.45	0.11
D/TC46	2			4.52	5.32	0.05
D/TC47	1	6	3/17/00 19:30	4.05	4.09	0.05
D/TC48	2			4.12	5.18	0.05
D/TC49	1	6	3/17/00 19:40	3.44	3.44	0.01
D/TC50	2			3.43	4.35	0.01

D/TC51	1	7	5	3/17/00 22:20	3.63	0.30	4.26	4.36	0.15	1.03	1.09	0.08	4.01	4.05	0.07	0.52	0.57
D/TC52	2				4.06		4.47		1.15		4.10						
D/TC53	1	7	4	3/17/00 22:35	4.10	4.02	0.12	5.22	5.15	0.09	1.95	4.96	4.95	0.02	1.13	0.82	
D/TC54	2				3.94		5.09		1.95		4.93						
D/TC55	1	7	3	3/17/00 22:50	4.50	4.58	0.11	5.79	5.84	0.08	1.78	3.76	3.83	0.10	1.27	0.51	
D/TC56	2				4.66		5.90				3.90						
D/TC57	1	7	2	3/17/00 23:05	5.17	5.19	0.03	6.40	6.52	0.16	1.98	1.79	0.26	4.02	3.94	0.11	1.33
D/TC58	2				5.21		6.63		1.61		3.86						0.47
D/TC59	1	7	1	3/17/00 23:22	4.61	4.78	0.24	5.23	5.33	0.14	1.54	1.49	0.07	3.52	3.56	0.05	0.55
D/TC60	2				4.95		5.43		1.44		3.60						0.94
D/TC61	1	8	5	3/18/00 2:08	0.16	3.42		0.13	3.47		1.18	4.15	4.15	####	0.05		
D/TC62	2				3.42		3.47				4.15						1.13
D/TC63	1	8	4	3/18/00 2:30	3.70	3.80	0.14	4.43	4.37	0.08	1.73	1.67	0.08	4.34	4.27	0.11	0.58
D/TC64	2				3.89		4.31				1.62	4.19					1.10
D/TC65	1	8	3	3/18/00 2:45	4.84	4.78	0.08	5.60	5.52	0.12	2.15	2.23	0.12	3.97	4.19	0.32	0.74
D/TC66	2				4.72		5.43				2.32	4.42					1.50
D/TC67	1	8	2	3/18/00 3:50	5.07	5.11	0.06	6.14	6.29	0.22	1.87	1.84	0.06	4.46	4.43	0.04	1.19
D/TC68	2				5.15		6.45				1.80	4.40					0.65
D/TC69	1	8	1	3/18/00 3:55	5.05	5.09	0.06	6.27	5.58	0.98	1.01	1.55	0.76	3.24	3.51	0.39	0.48
D/TC70	2				5.14		4.88				2.08	3.79					1.07
D/TC71	1	9	5	3/18/00 6:45	3.64	3.63	0.02	3.14	3.29	0.21	0.83	1.18	0.50	4.76	6.92	3.05	-0.34
D/TC72	2				3.61		3.43				1.53	9.08					1.52
D/TC73	1	9	4	3/18/00 7:00	4.42	4.54	0.16	3.92	3.93	0.01	2.64	2.41	0.33	6.91	6.50	0.58	-0.61
D/TC74	2				4.65		3.93				2.17	6.10					3.02
D/TC75	1	9	2	3/18/00 7:20	4.88	5.02	0.20	4.8	4.86	0.08	3.56	2.47	1.55	8.74	6.55	3.09	-0.16
D/TC76	2				5.16		4.92				1.37	4.36					2.63
D/TC77	1	9	1	3/18/00 7:40	5.13	5.25	0.17	5.16	5.15	0.02	2.15	1.95	0.29	8.27	7.77	0.71	-0.11
D/TC78	2				5.37		5.13				1.75	7.27					2.05
D/TC79	1	9	3	3/18/00 8:00	4.4	4.30	0.15	4.4	4.51	0.16	1.96	2.24	0.39	7.54	8.60	1.50	0.22
D/TC80	2				4.19		4.62				2.51	9.66					2.02
D/TC81	1	10	5	3/18/00 10:30	4.01	3.90	0.16	3.51	3.76	0.35	1.66	1.83	0.25	####	14.92	1.59	-0.14
D/TC82	2				3.78		4.01				2.01	####					1.97
D/TC83	1	10	4	3/18/00 10:36	3.92	3.92	0.00	4.14	4.12	0.04	1.85	2.33	0.69	8.39	10.06	2.36	0.20
D/TC84	2				3.92		4.09				2.82	####					2.14
D/TC85	1	10	3	3/18/00 10:57	4.99	4.99	0.01	5.96	6.27	0.43	2.09	2.42	0.47	6.06	6.61	0.78	1.28

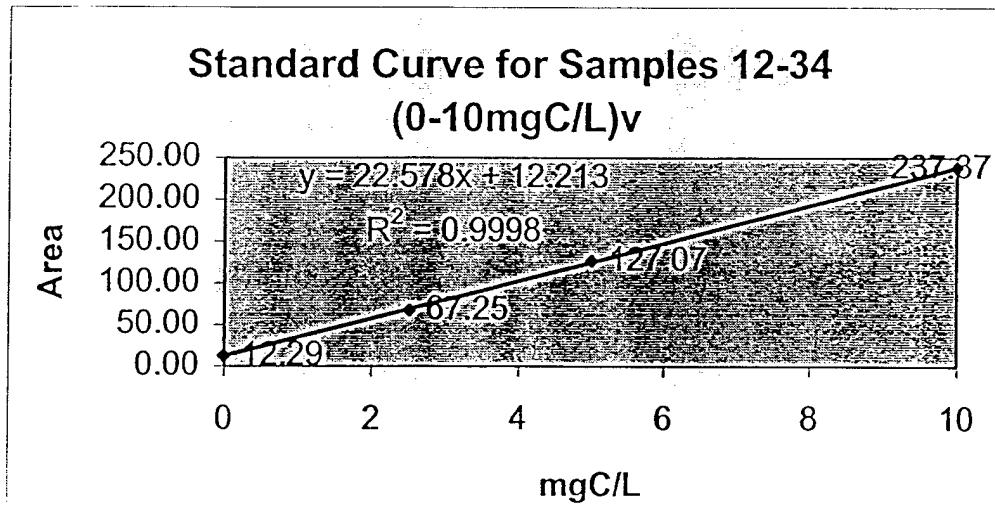
D/TC86	2		4.98	6.57		2.76	7.17					
D/TC87	1	10	2	3/18/00 11:13	6.37	6.27	0.14	8.13	8.63	0.70	3.45	3.61
D/TC88	2				6.17		9.12			3.77		7.61
D/TC89	1	10	1	3/18/00 11:30	6.16	6.16	#####	5.63	5.63	0.01	2.34	1.90
D/TC90	2							5.62		1.45		5.59
D/TC91	1	11	5	3/18/00 2:15	4.35	4.24	0.16	4.73	4.73	#####	1.61	1.78
D/TC92	2				4.12					1.96		#####
D/TC93	1	11	4	3/18/00 14:30	4.71	4.71	#####	5.11	5.39	0.39	2.06	2.13
D/TC94	2							5.66		2.20		#####
D/TC95	1	11	3	3/18/00 14:40	4.83	4.83	#####	5.97	6.91	1.33	2.17	2.58
D/TC96	2				4.83			7.85			0.58	6.89
D/TC97	1	11	2	3/18/00 14:50	5.59	5.71	0.16	7.02	6.52	0.71	4.52	3.92
D/TC98	2				5.82			6.02			3.31	5.76
D/TC99	1	11	1	3/18/00 15:10	6.96	6.96	#####	7.3	6.68	0.88	1.77	2.03
D/TC100	2				6.96			6.06		2.29		#####

# TOC Sample Data

Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1	Peak 2	Peak 1 TOC (mgC/L)	Peak 2 TOC (mgC/L)	Average TOC mgC/L	Std Dev mgC/L
12	DCFB (3/18)	040600E1ww12	32	67.6	0.88	2.45	1.66	1.11
13	DC92	040600E1ww13	105.2	105.1	4.12	4.11	4.12	0.00
14	DC85	040600E1ww14	125.7	124.2	5.03	4.96	4.99	0.05
15	DC89	040600E1ww15	150.5	152.3	6.12	6.20	6.16	0.06
16	DC87	040600E1ww16	150.5	161.4	6.12	6.61	6.37	0.34
17	DC91	040600E1ww17	111.7	109.1	4.41	4.29	4.35	0.08
18	DC90							
19	DC88	040600E1ww19	157.8	145.4	6.45	5.90	6.17	0.39
20	TC97	040600E1ww20	145.8	195.4	5.92	8.11	7.02	1.55
21	TC99	040600E1ww21	174.8	179.2	7.20	7.40	7.30	0.14
22	TC90	040600E1ww22	141.8	136.5	5.74	5.50	5.62	0.17
23	TC94	040600E1ww23	133.6	146.5	5.38	5.95	5.66	0.40
24	TC88	040600E1ww24	217.6	218.5	9.10	9.14	9.12	0.03
25	TC96	040600E1ww25	184.5	194.6	7.63	8.08	7.85	0.32
26	TC87	040600E1ww26	197.3	194.1	8.20	8.06	8.13	0.10
27	TC89	040600E1ww27	138.2	140.4	5.58	5.68	5.63	0.07
28	TC100	040600E1ww28	146.2	151.7	5.93	6.18	6.06	0.17
29	TC92	040600E1ww29	60.9	57.6	2.16	2.01	2.08	0.10
30	TC85	040600E1ww30	145.6	147.9	5.91	6.01	5.96	0.07
31	TC86	040600E1ww31	158.2	163.1	6.47	6.68	6.57	0.15
32	TC93	040600E1ww32	126.7	128.4	5.07	5.15	5.11	0.05
33	TC98	040600E1ww33	167.8	128.4	6.89	5.15	6.02	1.23
34	TC95	040600E1ww34	146.3	147.7	5.94	6.00	5.97	0.04



Yintercept= 12.213 Slope= 22.578

# TOC Sample Data

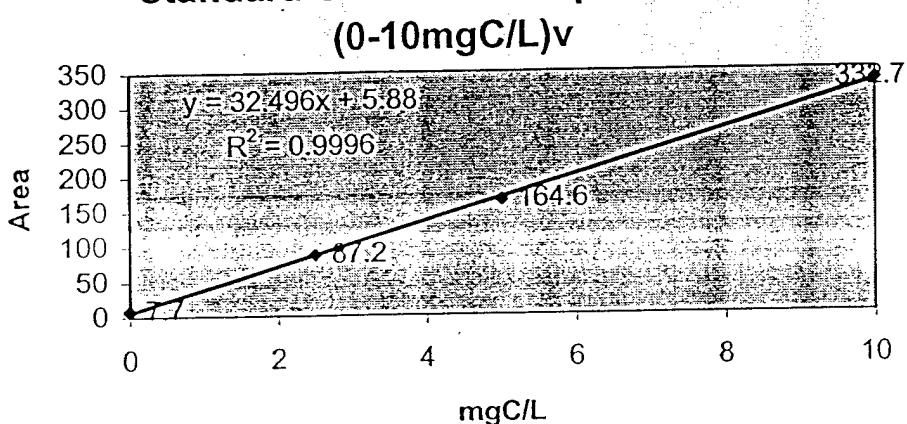
Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1	Peak 2	Peak 1 TOC (mgC/L)	Peak 2 TOC (mgC/L)	Average TOC mgC/L	Std Dev mgC/L
35	TC 84	040700E1ww01	135	142.6	3.97	4.21	4.09	0.17
36	TC 83	040700E1ww02	134.6	146	3.96	4.31	4.14	0.25
37	TC 82	040700E1ww03	126.9	145.4	3.72	4.29	4.01	0.40
38	TC 81	040700E1ww04	117.3	122.6	3.43	3.59	3.51	0.12
39	TC 80	040700E1ww05	143.1	168.8	4.22	5.01	4.62	0.56
40	TC 79	040700E1ww06	153.6	143.8	4.55	4.24	4.40	0.21
41	TC 78	040700E1ww07	165.4	179.8	4.91	5.35	5.13	0.31
42	TC 77	040700E1ww08	169.8	177.5	5.04	5.28	5.16	0.17
43	TC 76	040700E1ww09	160.4	170.9	4.76	5.08	4.92	0.23
44	TC 75	040700E1ww10	159.8	163.8	4.74	4.86	4.80	0.09
45	TC74	040700E1ww11	126.3	140.8	3.71	4.15	3.93	0.32
46	TC73	040700E1ww12	124.4	141.9	3.65	4.19	3.92	0.38
47	TC72	040700E1ww13	109.4	125	3.19	3.67	3.43	0.34
48	TC71	040700E1ww14	103.9	111.7	3.02	3.26	3.14	0.17
49	TC70	040700E1ww15	161.3	167.6	4.78	4.98	4.88	0.14
50	DC84	040700E1ww16	134.2	132.5	3.95	3.90	3.92	0.04
51	DC83	040700E1ww17	132.6	133.9	3.90	3.94	3.92	0.03
52	DC82	040700E1ww18	136.1	121.3	4.01	3.55	3.78	0.32
53	DC81	040700E1ww19	136.6	136	4.02	4.00	4.01	0.01
54	DC80	040700E1ww20	140.7	143.1	4.15	4.22	4.19	0.05
55	DC79	040700E1ww21	143.8	153.7	4.24	4.55	4.40	0.22
56	DC78	040700E1ww22	177.8	182.9	5.29	5.45	5.37	0.11
57	DC77	040700E1ww23	171.9	173	5.11	5.14	5.13	0.02
58	DC76	040700E1ww24	173.9	173.2	5.17	5.15	5.16	0.02
59	DC75	040700E1ww25	162.4	166.3	4.82	4.94	4.88	0.08
60	DC74	040700E1ww26	150.3	163.9	4.44	4.86	4.65	0.30
61	DC73	040700E1ww27	151.7	147.2	4.49	4.35	4.42	0.10
62	DC72	040700E1ww28	117.6	128.8	3.44	3.78	3.61	0.24
63	DC71	040700E1ww29	125.9	122.3	3.69	3.58	3.64	0.08

## Standard Curve for Samples 35-63

(0-10mgC/L)v



Yintercept= 5.88 Slope= 32.496

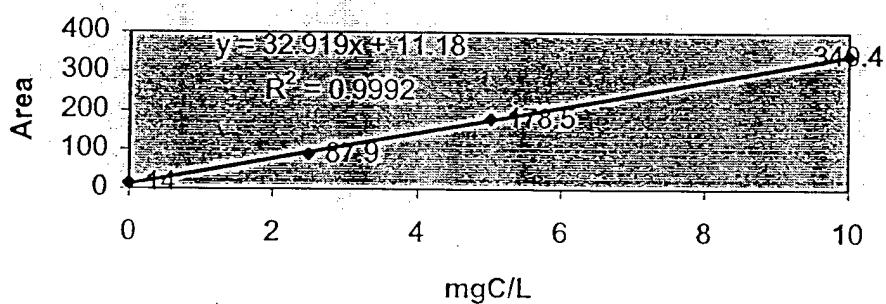
# TOC Sample Data

Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1 TOC		Peak 2 TOC		Average TOC mgC/L	Std Dev mgC/L	Comments
			Peak 1	(mgC/L)	Peak 2	(mgC/L)			
64	TC45	041100samp09	191.1	198.4	5.47	5.69	5.58	0.16	
65	TC46	041100samp10	186	186.6	5.31	5.33	5.32	0.01	
66	TC47	041100samp11	183.4	180.4	5.23	5.14	5.19	0.06	
67	TC48	041100samp12	182.7	180.6	5.21	5.15	5.18	0.05	
68	TC49	041100samp13	131.8	148.8	3.66	4.18	3.92	0.37	
69	TC50	041100samp14	151.7	156.9	4.27	4.43	4.35	0.11	
70	TC51	041100samp15	148.8	154	4.18	4.34	4.26	0.11	
71	TC52	041100samp16	157.4	159.2	4.44	4.50	4.47	0.04	
72	TC53	041100samp17	186.1	179.9	5.31	5.13	5.22	0.13	
73	TC54	041100samp18	173.4	184.1	4.93	5.25	5.09	0.23	
74	TC55	041100samp19	202.7	200.7	5.82	5.76	5.79	0.04	
75	TC56	041100samp20	205.9	204.9	5.92	5.88	5.90	0.02	
76	TC57	041100samp21	221	223	6.37	6.43	6.40	0.04	
77	TC58	041100samp22	229	229.8	6.62	6.64	6.63	0.02	
78	TC59	041100samp23	182.7	184.2	5.21	5.26	5.23	0.03	
79	TC60	041100samp24	188.4	191.6	5.38	5.48	5.43	0.07	
80	TC61	041100samp25	16.2	14.9	0.15	0.11	0.13	0.03	
81	TC62	041100samp26	124.7	126.4	3.45	3.50	3.47	0.04	
82	TC63	041100samp27	155.4	158.9	4.38	4.49	4.43	0.08	
83	TC64	041100samp28	163.3	143.1	4.62	4.01	4.31	0.43	
84	TC65	041100samp29	190.6	200.7	5.45	5.76	5.60	0.22	
85	TC66	041100samp30	183.5	196.4	5.23	5.63	5.43	0.28	
86	TC67	041100samp31	210.1	216.5	6.04	6.24	6.14	0.14	
87	TC68	041100samp32	223.6	166.3	6.45	4.71	6.45	1.23	

## Standard Curve for Samples 64-87 (0-10mgC/L)



Yintercept= 11.18 Slope= 32.919

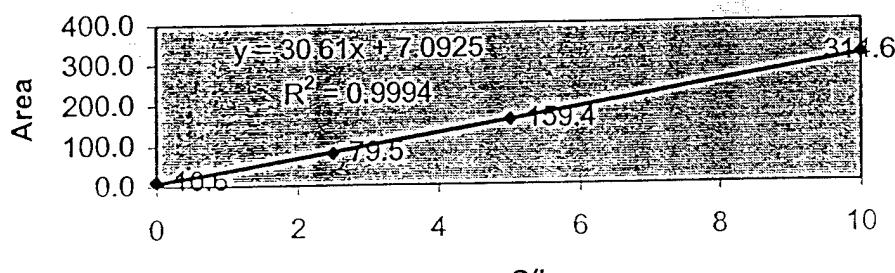
# TOC Sample Data

Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1	Peak 2	Peak 1 TOC (mgC/L)	Peak 2 TOC (mgC/L)	Average TOC mgC/L	Std Dev mgC/L	Comments
88	TC69	041100samp41	196	202	6.17	6.37	6.27	0.14	
89	DC45	041100samp42	141	140.5	4.37	4.36	4.37	0.01	
90	DC46	041100samp43	145.2	146	4.51	4.54	4.52	0.02	
91	DC47	041100samp44	131	131.1	4.05	4.05	4.05	0.00	
92	DC48	041100samp45	133.2	133.4	4.12	4.13	4.12	0.00	
93	DC49	041100samp46	113.2	111.7	3.47	3.42	3.44	0.03	
94	DC50	041100samp47	112.2	111.9	3.43	3.42	3.43	0.01	
95	DC51	041100samp48	117.2	119.4	3.60	3.67	3.63	0.05	
96	DC52	041100samp49	130.2	132.8	4.02	4.11	4.06	0.06	
97	DC53	041100samp50	132.1	133.3	4.08	4.12	4.10	0.03	
98	DC54	041100samp51	128.3	127	3.96	3.92	3.94	0.03	
99	DC55	041100samp52	143.2	146.3	4.45	4.55	4.50	0.07	
100	DC56	041100samp53	145.7	153.6	4.53	4.79	4.66	0.18	
101	DC57	041100samp54	165.7	165	5.18	5.16	5.17	0.02	
102	DC58	041100samp55	164.9	168	5.16	5.26	5.21	0.07	
103	DC59	041100samp56	147	149.5	4.57	4.65	4.61	0.06	
104	DC60	041100samp57	166.9	150.1	5.22	4.67	4.95	0.39	
105	DC61	041100samp58	12.8	11	0.19	0.13	0.16	0.04	erroneous
106	DC62	041100samp59	112.1	111.7	3.43	3.42	3.42	0.01	
107	DC63	041100samp60	120.5	120	3.70	3.69	3.70	0.01	
108	DC64	041100samp61	125.2	127.4	3.86	3.93	3.89	0.05	
109	DC65	041100samp62	155.8	154.7	4.86	4.82	4.84	0.03	
110	DC66	041100samp63	150.3	153	4.68	4.77	4.72	0.06	
111	DC67	041100samp64	157.1	167.3	4.90	5.23	5.07	0.24	
112	DC68	041100samp65	165	164.3	5.16	5.14	5.15	0.02	
113	DC69	041100samp66	160.3	163	5.01	5.09	5.05	0.06	
114	DC70	041100samp67	163.1	165.8	5.10	5.18	5.14	0.06	
115	DC44	041100samp68	145.5	145	4.52	4.51	4.51	0.01	

Standard Curve for Samples 88-115 (0-10mgC/L)v



Yintercept= 7.0925 Slope= 30.61

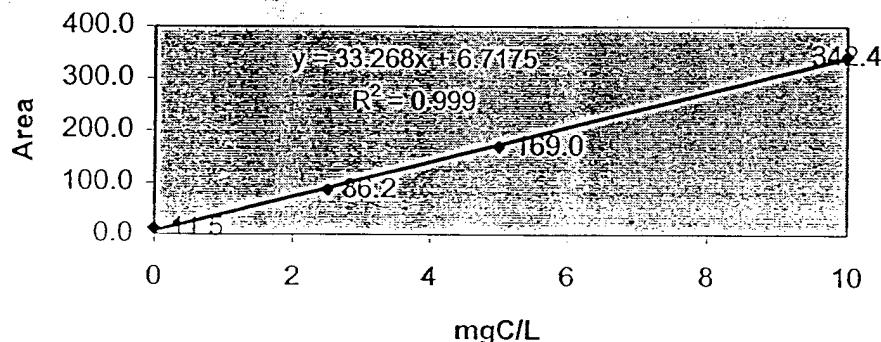
# TOC Sample Data

Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1	Peak 2	Peak 1 TOC (mgC/L)	Peak 2 TOC (mgC/L)	Average TOC mgC/L	Std Dev mgC/L	Comments
116	TC15	041200samp09	162.2	169.4	4.67	4.89	4.78	0.15	
117	TC16	041200samp10	157	160.8	4.52	4.63	4.57	0.08	
118	TC17	041200samp11	184.2	196	5.33	5.69	5.51	0.25	
119	TC18	041200samp12	204.1	209.1	5.93	6.08	6.01	0.11	
120	TC19	041200samp13	163.8	160.9	4.72	4.63	4.68	0.06	
121	TC20	041200samp14	157.3	160.9	4.53	4.63	4.58	0.08	
122	TC21	041200samp15	135.9	141.7	3.88	4.06	3.97	0.12	
123	TC22	041200samp16	149.6	145.4	4.29	4.17	4.23	0.09	
124	TC23	041200samp18	167.7	159.1	4.84	4.58	4.71	0.18	
125	TC24	041200samp19	149.8	151.7	4.30	4.36	4.33	0.04	
126	TC25	041200samp20	253.9	255.1	7.43	7.47	7.45	0.03	
127	TC26	041200samp21	261.2	262.1	7.65	7.68	7.66	0.02	
128	TC27	041200samp22	194.1	198	5.63	5.75	5.69	0.08	
129	TC28	041200samp23	183.7	178.1	5.32	5.15	5.24	0.12	
130	TC29	041200samp24	159.4	161.3	4.59	4.65	4.62	0.04	
131	TC30	041200samp25	163.2	233.8	4.70	6.83	5.76	1.50	
132	TC31	041200samp26	152.2	150.7	4.37	4.33	4.35	0.03	
133	TC32	041200samp27	142.1	140.5	4.07	4.02	4.05	0.03	
134	TC33	041200samp28	170	171.9	4.91	4.97	4.94	0.04	
135	TC34	041200samp29	185.4	190.3	5.37	5.52	5.44	0.10	
136	TC35	041200samp30	200.5	212.1	5.82	6.17	6.00	0.25	
137	TC36	041200samp31	185.4	195.4	5.37	5.67	5.52	0.21	
138	TC37	041200samp32	226.6	231.5	6.61	6.76	6.68	0.10	
139	TC38	041200samp33	258.1	252.2	7.56	7.38	7.47	0.13	
140	TC39	041200samp34	229	240.8	6.68	7.04	6.86	0.25	
141	TC40	041200samp35	226.4	230.7	6.60	6.73	6.67	0.09	

## Standard Curve for Samples 116-141 (0-10mgC/L)v



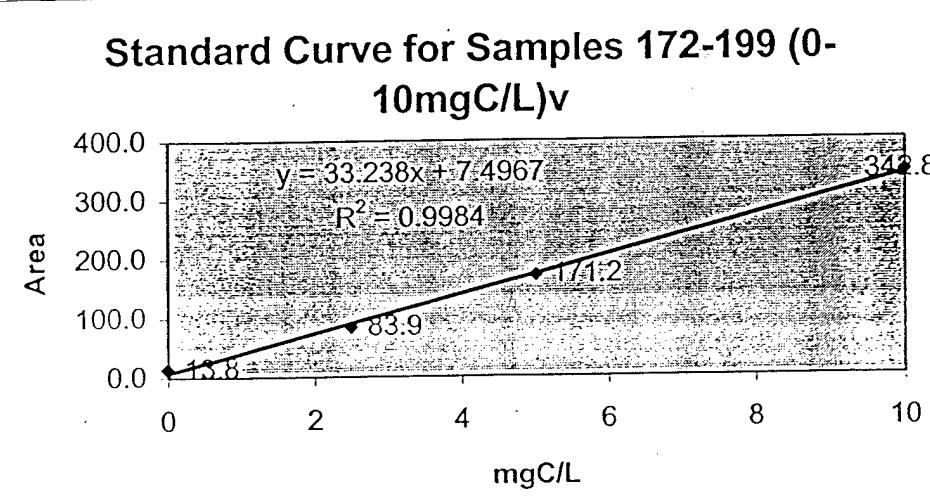
Yintercept= 6.7175 Slope= 33.268

# TOC Sample Data

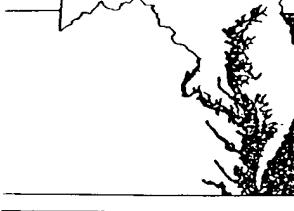
Note: Make sure to update slope and y intercept on standard plots sheet

Event 1

Analysis ID	Sample ID	File	Peak 1	Peak 2	Peak 1 TOC (mgC/L)	Peak 2 TOC (mgC/L)	Average TOC mgC/L	Std Dev mgC/L	Comments
172	TC05	041200samp82	104.3	104.5	2.91	2.92	2.92	0.00	
173	TC06	041200samp83	101.1	103	2.82	2.87	2.84	0.04	
174	TC08	041200samp84	177.7	179.2	5.12	5.17	5.14	0.03	
175	TC09	041200samp85	187	189.8	5.40	5.48	5.44	0.06	
176	TC11	041200samp86	120.3	121.1	3.39	3.42	3.41	0.02	
177	TC13	041200samp87	127.1	127.3	3.60	3.60	3.60	0.00	
178	TC14	041200samp88	125.6	127.6	3.55	3.61	3.58	0.04	
179	TC41	041200samp89	198	198.6	5.73	5.75	5.74	0.01	
180	TC42	041200samp90	245.8	205.7	7.17	5.96	5.96		
181	TC43	041200samp91	217.1	207.9	6.31	6.03	6.17	0.20	
182	TC43	041200samp92	189.7	193.5	5.48	5.60	5.54	0.08	
183	TC44	041200samp93	178.1	179.2	5.13	5.17	5.15	0.02	
184	TC2	041200samp94	126.7	129.4	3.59	3.67	3.63	0.06	
185	TC7	041200samp95	186.9	184.9	5.40	5.34	5.37	0.04	
186	TC10	041200samp96	208.1	249.2	6.04	7.27	6.04		
187	TC12	041200samp97	147	189.9	4.20	5.49	4.20		
188	DC5	041200samp98	121.4	105.5	3.43	2.95	3.19	0.34	
189	DC6	041200samp99	109.1	108.5	3.06	3.04	3.05	0.01	
190	DC8	041200samp10	151	164	4.32	4.71	4.51	0.28	
191	DC11	041200samp10	148.6	160.3	4.25	4.60	4.42	0.25	
192	DC13	041200samp10	145.5	144.8	4.15	4.13	4.14	0.01	
193	DC14	041200samp10	158.3	162.7	4.54	4.67	4.60	0.09	
194	DC1	041200samp10	187.4	171	5.41	4.92	5.17	0.35	
195	DC2	041200samp10	296.7	183.7	8.70	5.30	5.30		
196	DC10	041200samp10	197.4	207.7	5.71	6.02	5.87	0.22	
197	DC12	041200samp10	164.9	106.8	4.74	2.99	3.86	1.24	
198	DC42	041200samp10	270.8	261.3	7.92	7.64	7.78	0.20	
199	DC43	041200samp10	185	195.9	5.34	5.67	5.50	0.23	



Yintercept= 7.4967 Slope= 33.238



# CHESAPEAKE ANALYTICAL LABORATORY, INC.

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Environmental Quality Sciences  
U. S. Naval Research Laboratory  
Code 6115  
4555 Overlook Avenue, S. W.  
Washington, D. C. 20375  
Attention: John Pohlman

## REPORT OF ANALYSIS

July 7, 2000

RECEIVED: 06/29/00 @ 1550

SOIL T. K. & T. K. N's

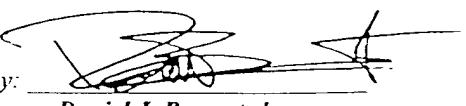
### Analytical Results, mg/L:

Sample ID	Results
K 65	0.72
K 226	0.71
K 84	1.07
K 221	0.77
K 81	1.18
K 228	0.88
K 227	0.82
K 146	0.98
K 222	0.95

### Analytical Information:

Parameter	Method	Analysis Date	Analyst
TKN	351.2	07/05/00	CM/DB

Reviewed and Approved by:



Daniel J. Brumsted  
Laboratory Director

### Total Kjeldahl Nitrogen (K)

**EVENT 1**      Date

Count	Cycle	Station	Bottle ID	Time Collected	Replicate	coll_by	Time stored	Comments
1	1	5	K01			1		0.54
2		4	K07			1		0.56
3		1	K03			1		0.59
4		2	K10			1		0.86
5		3	K04			1		0.82
6		3	K06			2		0.86
7	2	5	K17'			1		0.86
8		4	K16'			1		<0.50
9		1	K18'			1		0.59
10		2	K20'			1		0.92
11		3	K13'			1		0.93
12	3	5	K28			1		0.81
13		4	K26			1		0.84
14		3	K23			1		0.53
15		3	K25			2		0.50
16		2	K24			1		1.06
17		1	K21			1		0.87
18	4	5	K35			1		0.73
19		4	K39			1		0.72
20		1	K36			1		0.65
21		2	K34			1		1.04
22		3	K40			1		0.88
23	5	5	K48			1		0.94
24		4	K47			1		0.84
25		3	K46			1		0.81
26		3	K50			2		0.76
27		2	K43			1		0.66
28		1	K41			1		0.67
29	6	1	K55			1		0.77
30		2	K52			1		0.88
31		3	K51			1		0.98
32		4	K53			1		0.86
33		5	K54			1		0.92
34	7	5	K62			1		1.01
35		4	K69			1		0.81
36		3	K68			1		0.80
37		3	K70			2		missing
38		2	K67			1		<0.50
39		1	K63			1		0.76
40	8	5	K73			1		0.78
41		4	K76			1		0.94
42		3	K79			1		<0.50
43		2	K80			1		<0.50
44		1	K74			1		<0.50
45	9	5	K85			1		<0.50
46		4	K89			1		0.68

47		2 K81		1			0.60
48		2 K88					<0.50
49		1 K83		1			dup
50		3 K89		1			0.71
51	10	5 K94		1			0.87
52		4 K97		1			0.99
53		3 K92		1			0.96
54		2 K96		1			0.57
55		1 K95		1			0.87
56	11	5 K107		1			0.86
57		4 K106		1			0.92
58		3 K103		1			0.77
59		3 K104		2			1.01
60		2 K101		1			0.53
61		1 K82		1			<0.50
62		KFB1		1			missing
63		KFB2					<0.50
64		KEB1		1			(0.02)

E3

KEB 31  
 KFB 31  
 KFB 32  
 KFB 34  
 K 362

<0.50 (0.00)  
 <0.50 (0.02)  
 <0.50 (0.00)  
 <0.50 (0.02)  
 1.23

65 samples tested